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THE NORTH DAKOTA FARMER

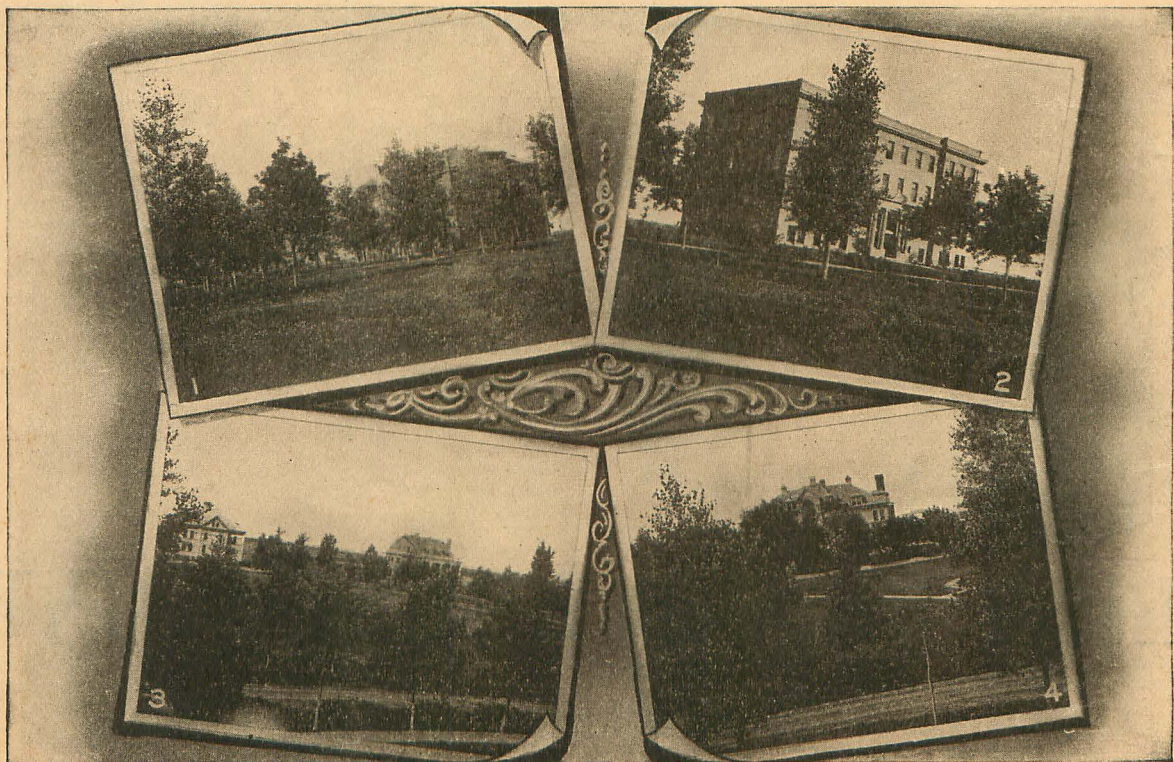


WE CATER ONLY TO THE INTELLIGENT FARMER

Vol. 9, No. 2
LISBON, N. D.

AUGUST 15, 1907

50 Cents a Year
FARGO, N. D.



Views on the Campus of the State University of North Dakota, Grand Forks.

1. Southeast Campus and Budge Hall.
3. Ladies' Hall and President's House

2. Science Hall.
4. Davis Hall.

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The University of North Dakota

(STATE UNIVERSITY)

GRAND FORKS, NORTH DAKOTA

Will open for its Twenty-Fourth Annual Session, Tuesday, September 24th, 1907.

The University is the oldest and best equipped educational institution in the State. The Library, Museum and Laboratories are unusually complete. The standard of scholarship in all departments equal to that of the oldest institutions in the country. Tuition free, except in the College of Law.

Buildings—The University has nine buildings, heated throughout by steam and lighted by electricity. Three new buildings—the Carnegie Library, School of Mines, and a combined Gymnasium and Assembly Hall—are in process of erection.

Board—With room heated, lighted, and furnished including bath, use of laundry, etc., \$3.50 a week. The total expenses for the year need not exceed \$145. (See catalogue.)

COLLEGE OF LIBERAL ARTS

A four years' course, which the wide range of elective studies makes it possible to vary to suit the aptitude and needs of the individual student, leads to the degree of Bachelor of Arts. In the College of Liberal Arts a four years' course in Commerce is offered, the purpose of which is to give special training to those expecting to enter general business, banking, journalism, or the United States civil or consular service. Those who complete this course receive the degree of Bachelor of Arts. Post-graduate courses are offered leading to the degree of Master of Arts. George S. Thomas, M. A., Ph. D., Dean.

TEACHERS COLLEGE

Teachers College requires for admission the completion of a first-class high school, or its equivalent, and leads to the degree of Bachelor of Arts (B. A.) and to the Bachelor's Diploma in Education. This last is a certificate of qualification for teaching in the high schools of the state. Four years are required unless the student, by excellence of work, can shorten the time. The Preparatory Department, still at the University, is being transformed into a Model High School for observation and practice, under the supervision of Professor C. C. Schmidt, recently Superintendent of Schools at Jamestown, N. D. Graduate courses leading to the degree of Master of Arts (M. A.) are also offered. The Teacher's Diploma, which is good in law as a State Certificate, is granted by Teachers College on the completion of a two years' curriculum of academic and professional work of college grade. Joseph Kennedy, M. A., Dean.

COLLEGE OF LAW

Strong faculty of able lawyers. An excellent library. Two years' day course and three years' night course lead to the degree of LL. B. Andrew A. Bruce, M. A., LL. B., Dean.

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Four year courses are offered leading re-

spectively to the degrees of Mechanical and Electrical Engineer (M. E. and E. E.). Excellent advantages. Write for catalogues. Calvin H. Crouch, M. E., Dean.

COLLEGE OF MINING ENGINEERING (School of Mines)

A four years' course in mining engineering leading to the degree of Engineer of Mines (E. M.). Applied courses and practical work. A new building is now being erected for this college. Special attention given in the laboratories and testing department to the development of North Dakota resources. For full information address Earle J. Babcock, B. S., Dean.

CIVIL ENGINEERING

A four years' course in civil engineering. Graduates receive the degree of Civil Engineer (C. E.).

COLLEGE OF MEDICINE

The University offers the first two years of a regular four years' course in medicine. Students who complete this course are admitted to all reputable medical colleges and given full credit for two years of work. The facilities of the University for offering the first two years of a standard medical course are unsurpassed. The Public Health Laboratory for the state is located at the University in connection with the College of Medicine. Melvin A. Brannon, M. A., Dean.

SCHOOL OF COMMERCE

With a three years' course, offers excellent facilities for preparation for all lines of business. The very best facilities in all commercial branches. W. M. Bryant, M. Acct., Principal.

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Several splendid farms in mild Virginia are now on our books and will be sold at reasonable prices.

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Send for descriptive list or, better yet, call on us while en route to the Jamestown fair and let us show you our offerings.

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Star Building, WASHINGTON, D. C.

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For successful farming in the dry seasons and for doubling the crops in years of abundant rainfall. Drouth banished without irrigation, no crop failures, no betting against the weather. System adopted with great success by practical farmers all over the West. Prepare now for next year. Circulars free, or 10 cents for Campbell's Soil Culture Almanac, which tells all about it.

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CUBA!

CUBA!

Something You Should Know Before Buying Land Anywhere.

READ THIS IF NOTHING ELSE:

Of the thousands who buy agricultural lands, how many ever stop to consider **THE REAL IMPORTANT FACTORS** that will make their land valuable, separate from the thousand minor advantages that may be only temporary, or disadvantages that may be overcome?

The relative importance of these factors is where most men in making their calculations fail, the trouble being that they never attempt to consider their relative importance, but size the proposition up as a whole, confusing the most important with the most trifling sentimental details.

The **TWO FUNDAMENTAL FACTORS** to be considered in buying agricultural land, regardless of whether they be in Canada, the United States, or Cuba, are the **PRODUCTS** and the **MARKETS**. Under markets we must also consider the distance from and transportation facilities to the markets. Thus **THE MORE VALUABLE THE PRODUCTS, THE BETTER THE MARKETS AND THE CHEAPER THE TRANSPORTATION**, the more you will realize off an acre, therefore the more valuable.

If one acre produces wheat of the gross value of \$10 and another acres oranges worth \$500, the net profit from the latter under ordinary circumstances would be many times the gross value of the former. If a man can raise \$500 worth of products from one acre, it will not take many acres to support a family, whereas, if you could raise but \$10, it would take a great many more to accomplish the same object. It necessarily follows that the fewer acres required to support a family, the more valuable they must be.

Let us see if our theory is not sound by applying it to actual experience and known conditions. Where do we find the highest priced land in the United States?

IN CALIFORNIA GOOD ORANGE GROVES ARE WORTH FROM \$1,000 TO \$1,500 PER ACRE. Why? Because their **PRODUCTS** are so **VALUABLE**, that notwithstanding they are so far from markets, a good rate of interest on that valuation could not be maintained. It goes without saying that if they were closer to markets, they would be worth more.

Another class of lands that are very valuable are those that lie sufficiently close to the large cities that it enables them to do truck farming and place their products on the market with very little expense.

But there are **MANY WHO IGNORE THESE FACTORS** and permit themselves to be guided by some trifling fear that the successful man is willing to overcome. You may have seen many of these men in

North Dakota looking for land during the 90's when land could be bought for \$5 per acre. Many of these were above the average of intelligence that made the common mistake. One man would drive out in the country and discover some unfortunate man who had lost his crop by hail and it was all off with him. You could not sell him land at any price. Another on a nice still day would be attacked by mosquitoes in a lively manner and he would declare that this was no country for a white man—the mosquitoes would soon make him red. They were the most important factors in his mind, or at least all he would consider. Another man would come up during the winter and be snowed in on a branch line of railroad and he would most solemnly promise his Creator if he would let him out of this country that he would never come back, and he generally kept his promise. Thus they would come and go, without ever considering the amount of wheat they could produce per acre, or the price per bushel that could be had. These are the factors that have increased the value of land in North Dakota from \$5 to \$35 per acre, but they were overlooked then, to consider hail, mosquitoes, snow, etc.

THE OBJECT OF THIS ARTICLE is to enable the reader to make a safe and profitable investment by going to the very bottom of the proposition to ascertain **WHY** they may expect something good, and further to enable them to see **WHY THE FRUIT AND VEGETABLE LANDS OF CUBA WILL SOME DAY BE THE MOST VALUABLE IN THE WORLD.**

THE PRODUCT OF THESE LANDS CANNOT BE EQUALED IN VALUE by any in the United States, as they produce not only oranges, lemons, grape-fruit, etc., but strawberries, tomatoes, and all kinds of vegetables that one can put on the market in January and February when they command fabulous prices. Cuba is only one-third as far from the eastern markets as California and she is not at the mercy of the railroads as is California, but has **WATER TRANSPORTATION**, the very **CHEAPEST IN THE WORLD** and one that cannot be monopolized. Thus you can easily see **WHY** we sum up the advantages in the following few words that mean so much, to-wit: **HER PRODUCTS ARE THE MOST VALUABLE IN THE WORLD (Eastern United States and Canada), AND HER TRANSPORTATION (water) THE CHEAPEST IN THE WORLD**, and we leave it to you if this will not make Cuba's fruit and vegetable lands (when developed) the highest priced in the world. Here is another question for you to answer. What should you do under these circumstances?

Write for free map of Cuba, also pamphlet descriptive of Cuba.

North Dakota Company,

Gray Block,

VALLEY CITY, NORTH DAKOTA

THE NORTH DAKOTA FARMER

Vol. 9, No. 2

LISBON and FARGO, N. D., AUGUST 15, 1907

50 Cents a Year

OF GENERAL INTEREST

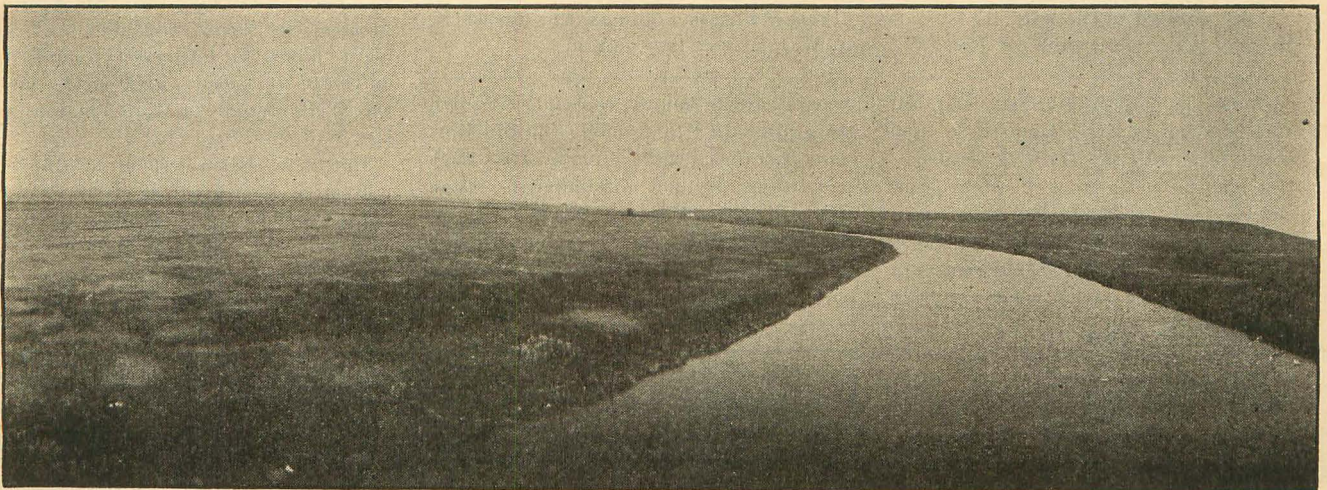
WILLISTON AND BUFORD-TRENTON IRRIGATION PROJECT.

On June 29th, last, there gathered at Williston, Williams County, to inspect and formally open, the Williston and Buford-Trenton Irrigation Projects, what was probably the most notable assemblage of distinguished men ever within the State of North Dakota, at one time. These projects have been constructed by the U. S. Government, through the Reclamation Service. Most distinguished among those presents at the opening was Honorable James Ru-

identified with the growth and development of the state, met the Secretary and party at Williston and assisted in making the occasion a memorable one.

As irrigation has been carried on on none but a very small scale in the state and confined, as it is, to a few sections of the Missouri slope, but few of our people are as yet well acquainted with its wonderful possibilities and advantages. However the few private plants already in operation are paving the way for a more wide-spread knowledge of the subject and now that the Government Projects at Buford-Trenton

in the west, 35,000 acres of which can be brought under the ditch, and the other farther down the Missouri River, at Bismarck. On the Mouse River many projects on a minor scale, both pumping and gravity, can and will be installed, sooner or later. Even in the famous Red River Valley which, admittedly, is at present more in need of drainage than irrigation, much better crop results could be obtained through a Government system of irrigation working in conjunction with an adequate system of drainage. Those of us who have lived and farmed in North Dakota during the past ten years have all seen years in which our wheat, oats, barley, rye and corn yields would



Lands Under the Williston, N. D., Irrigation Project.

dolph Garfield, Secretary of the Interior in President Roosevelt's cabinet and a son of former President James A. Garfield. With him were Dr. F. H. Newell, Director of the Reclamation Service, Mr. A. P. Davis, Chief Engineer of the U. S. Government, Mr. H. N. Savage, Construction Engineer, and many other officers and engineers of the Reclamation Service. U. S. Senators H. C. Hansbrough and P. J. McCumber, Congressmen Thos. H. Marshall and A. J. Gronna, Lieut. Gov. Lewis, A. L. Fellows, State Engineer, many of our state Senators and Representatives and several hundred prominent citizens of North Dakota who have been closely

and Williston have been opened, a new era of irrigation has been inaugurated for the State of North Dakota. With the further development of these projects and the practical demonstration of the benefits to be derived from irrigation, the installation of additional projects, both under private and Government construction and supervision, will rapidly follow. In fact the Reclamation Service has already completed surveys and is in possession of sufficient data to state that two exceptionally feasible projects could be established, one at Nesson, 25 miles east of Williston, where is found one of the most beautiful and fertile valleys

have been practically doubled had we but been able to turn on the water and give the ground one or two good soakings during the month of July.

By many who are not familiar with irrigation and the results obtained therefrom, the idea has been gathered that it is really necessary in Western raise a paying crop. However this idea, if it actually does prevail, is wholly erroneous and misleading. Farming operations have been, for 22 years past, and are now being carried on, on a fast increasing scale in acreage as well as remuneration, throughout the entire western portion of the state, without the help of irrigation. But



Back row from left to right. State Sen. Talcott, H. C. DeLane, Gov't Contractor, State Sen. Spoonheim, State Sen. Koffel, H. N. Savage, U. S. R. S. (Big man with moustache), Mr. G. Sanford, U. S. R. S. in charge Buford-Trenton Project. W. B. Overson, Atty. Williston Water Users Association (extreme right).

2nd row from left to right. U. S. Rep. A. J. Gronna, U. S. Senator, H. C. Hansbrough, Mr. A. P. Davis, Chief Engineer, U. S. Gov't.

Lower row. Hon. James Rudolph Garfield, Sec. Interior (Small moustache, hand on rail), U. S. Rep. Thos. H. Marshall and U. S. Sen. P. J. McCumber.

On Ground to the left. E. C. Carney, Pres. Williston Commercial Club, G. B. Metzger, Postmaster and 1st Pres. Williston Water Users Association.

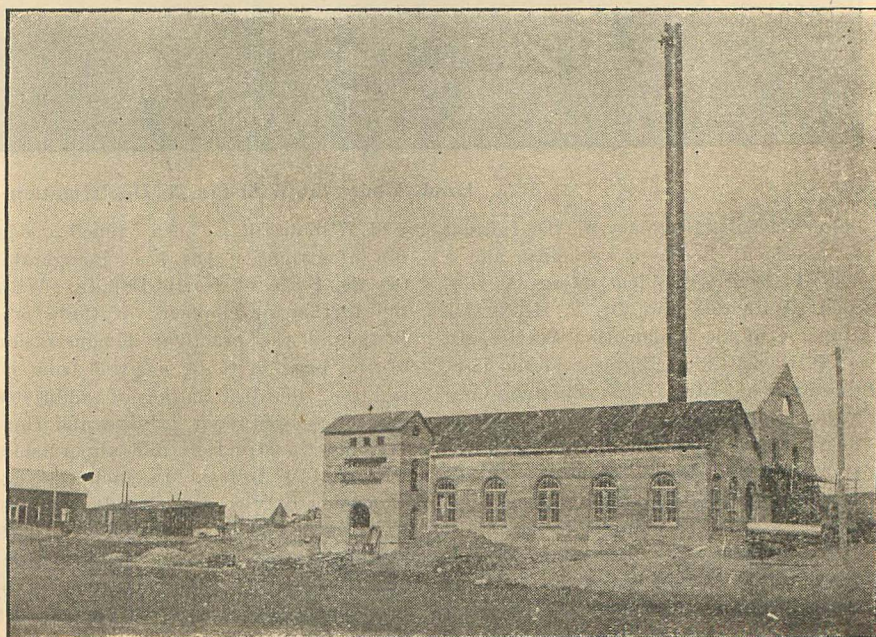
with the help of a practical and reliable system of irrigation these good crop yields will not only be assured—yes, guaranteed,—from year to year, but they will be doubled both in quantity and value. A farmer can, so to speak, while eating his Christmas dinner tell you just about what his grain, alfalfa or sugar beet yield will be the following harvest. He knows that his soil is the very best to be found; whether it rains or not he suffers not for lack of moisture, for he has but to open the head-gates and let the good waters run out on to his fields when needed, and the hot July and August sun is to him a blessing and the hotter the sun the greater the blessing. His ground is moist by day and by night and when in August his grain has attained its fullest growth he has but to close the head-gates, shut off the water and watch his crops mature to their very fullest. True there is work, everlasting work, to be done while all this is going on and it is for that reason that the irrigated farms of the United States, embracing over 20,000,000 acres, average less than 30 acres to the farm. 40 acres under full irrigation is a good-sized farm, as much of a farm, in fact, as is 160 acres of our Dakota dry farms, and 80 acres is about as much as even our big Red River Valley farmers

would care to handle, especially if sown to grain. In Utah, among the big Mormon families, where climate and other conditions are not dissimilar to those prevailing in Western North Dakota, the average irrigated farm consists of but 22 acres. On these small acreages sugar beets—hundreds and thousands

of tons of them—are raised annually, the yield running from 18 to 35 tons per acre, and bringing from \$4.50 to \$5.25 per ton. Tests made from Dakota-grown sugar beets have shown as high as 21 per cent saccharin and already plans are under way for a \$1,000,000 beet sugar factory at Williston, capital being furnished by western beet sugar manufacturers who have been over the grounds.

They rely on the Williston factory to supply practically the entire State of North Dakota with sugar. It is interesting to note, in this connection, that the labor question, so vital in eastern and central states to the beet sugar industry, is here easily and satisfactorily solved. For the past several years the western manufacturers have employed Indians secured from the various reservations, in the culture of the beet and they have been found to be more efficient than any other class of laborer excepting possibly the Japs. One Indian squaw, and they are the best workers, will accomplish more than two white men in a day's work in the sugar beet fields and at a much lower wage. From the Berthhold Reservation of the Gros Ventres and the Ft. Peck Reservation of Sioux, it is planned to secure sufficient and efficient labor to adequately plant and cultivate the beet sugar fields under the Yellow-stone, Buford-Trenton and the Williston Projects.

But it is the growth of alfalfa that will give the greatest value to the lands under these several projects. Wherever in the state its cultivation has been undertaken with the help of irrigation, there the full worth and



Exterior Main Power Plant, Williston, N. D. Irrigation Project

value of irrigation has been demonstrated. Thanks to the untiring labors of our Agricultural College corps and a few of our loyal "bonanza farmers", alfalfa is annually being more extensively grown over the entire state. It is a wonderful crop, highly profitable in its culture and but a few years hence thousands of acres will be grown where to-day is seeded wheat, oats and flax. Where but one and possibly two cuttings can be gathered by dry-farming, three good cuttings and a fall pasturage are each year assured under irrigation and the explanation is not difficult of understanding. To begin with, the plant has all the advantages of an early spring start and with the aid of but very little water is kept continually on the growth. First cutting is made at about the time the growth would be but fairly under way with dry farming. And it is at cutting time that the great need and help of irrigation is most apparent. With the undergrowth and soil, damp and moist, sudden exposure of the tender plant ends to the hot rays of the sun will, without the aid of a handy shower, retard, rather than aid, its new growth. But with a generous soaking from the canal waters quick returns are apparent and the crop is well started toward second cutting. So when the sun is hottest it keeps up the steady growth until one can almost see it move. After the third cutting there is still left sufficient time, even in this latitude, to give growth to a fall pasturage worth, at fair estimate, one dollar per acre and even more to the farmer with lambs to grow.

Few of our people know that our State of North Dakota has a credit of some \$4,500,000.00 in the Reclamation Fund at Washington. Few of them know how it got there or where it came from and few of them know what it will—and in fact must be—used for.—Next month I will tell them something of it.

E. R. Brownson,
Sec. Williston Water Users' Ass'n.

A PIONEER IN NORTH DAKOTA IN 1878

One who goes before to remove obstacles and "break-the-way" is called a pioneer, according to our regular definition. Provincial French gives it as a "foot soldier," both are correct as pioneers would certify. North and South Dakota were termed Dakota Territory at that early date. Some who came and faltered, called the country a "Dakota Terror." After thirty years of experience, I changed the small letter to a capital, it being an important name, not a common noun and now

write pioneer with a capital and abbreviate it, Pr.

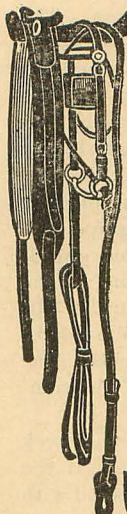
The Puritans of this country on the N. E. coast had only Puritan fathers. But this territory had both Pioneer fore fathers and fore mothers. In our early days a man had a homestead, preemption and tree-claim, the mother had no claim to induce her to leave civilization, home, friends, church and schools to take her children into a wilderness. Her experiences were hardships, illness and no physicians. Did it ever occur to you that 160 acres of land for a mother would have been an inducement for her to come, where she could find an income to educate her children in her own right?

In those early days, the tearing away from home and friends, brought homesickness, tears, discontent and often early graves. To begin life afar in the rude, uncomfortable structures like log cabins, burrows and dug-out created new thoughts and stern realizations. A new town is opened, people commence to plan new homes, schools, churches and societies; and last, but not least, in our midst, they stop to consider the sequestered place for the departed dear ones. The thought startles one at first. Why, what need have we for a cemetery yet? Who will go first? As quickly as thought, one is called, the new acre has been broken, "God's Acre." This event in a new community is the most solemn experience to consider, the most hallowed of all claims. Mothers and children first consecrated the new cemetery.

Our relatives in the extreme east wrote letters of inquiry, asking if Indians disturbed our habitations? Were we afraid of them? We had longed to meet them, but they had long ago with the buffalo deserted the plains. Only their prints were left. Have you built your house? they ask. Have you double parlors and a bay window for plants? Questions too elaborate to answer, and burdens too heavy to meet. They were living in ancestral homes, and never knew the date of the house erection nor by whom or when the first tree was planted, how expensive the building or how limited the means the pioneer had to build his cabin or shanty of sod.

We were fortunate to find a man who could saw a board and drive a nail straight or put in a window and casing.

The first view of our new home was a straight line like this—, which divided sky and grass, the clearest of skies, the greenest of prairie grasses, studded with wild flowers, each having a legend of Indian lore immortalized by song of poet. The roads were anywhere, the swish of the tall grass on wheels sounded like wheels revolving in water. Mails with ancient dates were none the less acceptable. Long



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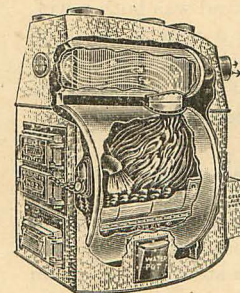
makes old harness like new. Made of pure, heavy-bodied oil, especially prepared to withstand all weathers.

For all axle troubles use **Boston Coach Axle Oil**. Better and more economical than castor oil. Will not gum or corrode. Lasting, reliable, satisfactory. Highest Award, World's Columbian Exposition.

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Burns any kind of fuel

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Compound
Horizontal
Radiator
Furnace**

Thousands in use;
11 Years on the
Market.

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IMPROVED HOT BLAST VENTILATING SYSTEM AND CIRCULATING RADIATOR, which gives perfectly pure air and Saves One-Third of the Fuel. Any handy man can properly install one of these furnaces with all connections in a short time. These furnaces absolutely make the best and most durable heating plant in use. Everything guaranteed to be first-class. We can save you 40 per cent on the cost of your heating plant, our price being but little more than good stoves. Send for catalogue. We have the largest and best line of furnaces in use, including our Celebrated WATERLOO

Furnace, complete for **\$43**

Manufactured and sold by the
BOVEE GRINDER & FURNACE WORKS,
Waterloo, Iowa

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4 Wheel Sweep Rake,	22
Over-shot Stacker, complete	28

The "Alfalfa King" line is first-class and sold on approval. Save Money. Buy direct. It is absolutely safe. Write today for best proposition ever made by any factory.

CASCADEN MANUFACTURING CO.,
Waterloo, Iowa

days made one hungry and thirsty for reading matter. We opened old books and found new interest in them. The Song of Hiawatha written by Longfellow was new again. We found we were actually living on his hunting grounds." "The foot-print of the bison," the "buffalo trail," was right before our door. Winona, the red prairie lily and mother of Hiawatha, was plucked in our door yard. The wild grape vine in which "Old Nokomis" (his grandmother) swung to earth, hung in the trees in the forest by the stream. "Hiawatha's Chickens," the game fowls, were crowing on our fields. The "Heaven of the wild flowers," the rainbow, was arched above us.

If you did lose the day of the week or month it was all the same. If the walls of the cabin had been papered with calendars you were none the wiser. When you went to town for mail the P. M. would start you right.

To the early settler, necessity was indeed a mother, the culinary art had to be modified. The wind was both a welcome guest. Many a time a washing was snapped, rent in twain, lodged in the next section if captured by the wind in winter. Seeding time might disclose it.

One man took his opera glass and looked for Sunday. A woman lonely and almost desperate with the roaring of solitude (as she expressed it) sent to a Chicago church book store for lessons on the Prayer Book and made a better church woman, by its study, during the long days in summer.

Another, after toil and care of children and no English tongue to visit with in the community, took the dump-cart and made the end board fast, put in the little ones and roamed the prairies for curios. On the bleached buffalo bones she painted rustic views of the country, sketched log cabins, etc. Buffalo skulls made clock frames for small time pieces.

If one would not overlook the near for the remote they will find themselves in touch with beauty, art and utility, rocks in the soil, beauty and art in the flowers, humor in everyday life.

The arrival of the first vehicles was equal to a ragamuffin parade. Boxes on slabs, and barrel staves and seeders to do town shopping, stone-boats that slid as glass on the dewy grass over the roadless prairies, made you feel you were a god of a myth gliding by. All aroused cheers as they entered the rival race to the newest town. Many a sod house made guests welcome to the proffered soap box or empty nail kegs for seats.

"Spare the rod and spoil the child" for need of a switch? Before trees could be grown the incorrigible lad would reach manhood, had not the practical mother plucked the tough

wild sunflower and made a leafless withe of chastisement.

Blackboards and chalk on the kitchen wall came to use before schools were opened, daily lessons were studied and printed by the small emigrants. Sunday schools were taught at home. Children's papers and magazines were eagerly read. Indeed the children were happy and retentive students of nature on the simple ranch. Today some of them are men and women of our foremost ranks.

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fords. At once, apply to the Agricultural College for information. Ask for the North Dakota Farmer, the North Dakota Magazine and Institute reports, and all Pioneers will freely leave the "latch string out" at your disposal. Pr. of '78.

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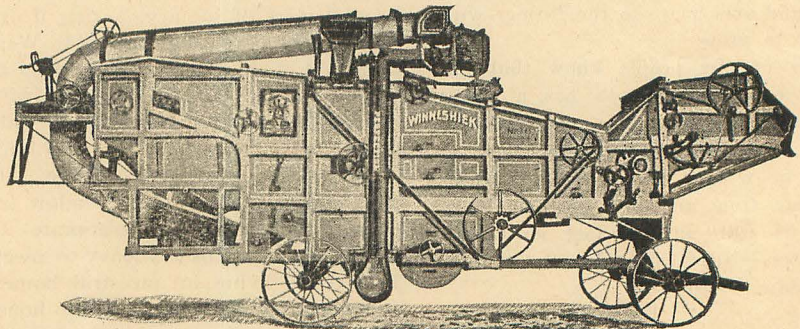
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The only resident Hide and Fur dealers in the state dealing in Hides, Furs, Wool, etc. exclusively. "Established For Nearly a Quarter of a Century." Send for Price Lists, Tags, etc. Sent Free. When writing this firm mention that you saw their ad in The North Dakota Farmer.

THE INTER-STATE FAIR

The Inter-State Fair held at Fargo July 29 to August 3 was a pronounced success from a financial standpoint. The attendance was good every day. From the time Barney Oldfield was called to make his race against time with his fast automobile till the close of the fair there was amusement and entertainment for all visitors. The races were without question among the best ever held in the state.

The stock exhibits were not what they would have been had the inducements to stock breeders been a little more tempting; nevertheless the visitors saw some of the best herds of cattle in the northwest. In the shorthorn classes entries were made by W. W. Brown of Amenia, who owns the champion herd in the state. S. Fletcher also competed in the shorthorn classes, winning several blue ribbons and showing champion young herds. The North Dakota Agricultural College also carried away some good prizes. The leading Hereford exhibits were made by Cronk of South Dakota and Mills of Hannaford, N. D. Heavy entries were also made in the Aberdeen Angus classes, L. H. White of Cogswell, Frank Sanford, Rogers, McFarland & Connor, Valley City, and Campbell from Minnesota making exhibits.

Donald Campbell of Hannaford had things his own way in the Clydesdale classes. There was more competition, however, in the Percheron ring, where O. O. Ellison of LaMoure, White Bros. Valley City and Burgess & Lukyn of Fargo came into competition. Mr. Ellison won first and sweepstakes on stallion and White Bros. first and sweepstakes on two year old mare. Good entries were made in standard bred and Shetland classes. L. H. White being the principal exhibitor in the latter classes.

The Agricultural College exhibited some good sheep also large Yorkshire hogs. In the Poland China classes Willard of Glyndon, Axel Peterson of White Rock, S. D. and Schutt of Fairmount were the leading winners.

The exhibits of farm and dairy produce were very good for this season of the year.

One of the most attractive and interesting exhibits of the whole fair was that of the chemical department of the Agricultural College showing conclusively the results of experiments with foods, whiskies, tobacco, etc. The exhibits made by various schools and especially the work shown by the A. C. from pattern and machine shop proved exceptionally interesting.

The leading poultry exhibits were made by L. H. White of Cogswell. In this connection we would state that Mr.

White was the largest exhibitor of poultry and live stock at both Grand Forks and Fargo. This too in spite of the fact that he lost several thousand dollars worth of his choicest stock in a fire just before shipping to Grand Forks.

EDGELEY EXPERIMENTAL FARM

Mr. Grout, who has just visited the Edgeley Experiment Farm informs us that marked progress is being made in accomplishing results that will be of immense practical value to the farmers of the state. Mr. O. Thompson, Superintendent of the station, is a practical man who has the ability, industry and intelligence to pursue experiments till satisfactory results are obtained. Practically the entire farm is divided into plots of one-tenth of an acre, so as to have sufficient space to make experiments and not spread the work too much. Among the principle experiments that have been undertaken to date have been with the conservation of moisture and the maintenance of the fertility of the soil. This is being accomplished largely by the use of modern tillage methods, summer fallow and

crop rotation. While this is only the second year with many of the experiments results are very evident already. On the farm are about 160 rods of willow hedge. This was all cut back this spring, trimmed to a level and has made a growth of four and one-half feet

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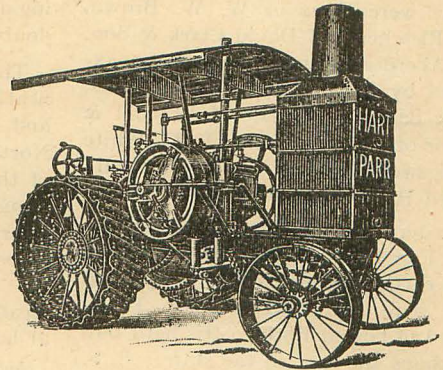
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already this season. The orchard contains many varieties of fruits and berries. As a whole the work is progressing most satisfactorily, and in this no small credit is due to the Superintendent Mr. Thompson. Any farmer who is in a position to make a visit to one of the state experiment farms can learn in a day or two what has taken years of toil and practical experiments to accomplish. He can see with his own eyes what modern tillage and rotation methods will accomplish.

THE NORTH DAKOTA STATE FAIR

The best state fair ever held in North Dakota was held in Grand Forks, July 23-27.

Both beef and dairy cattle were shown in large numbers and the liberal premiums offered by the Grand Forks management played no small part in making this feature of the fair a conspicuous success. Among the beef cattle exhibitors were C. E. Clark with his champion herd of Shorthorns. The aged cow shown by Mr. Clark attracted particular attention of admirers of Shorthorns because of the fact that she had won Grand Championship at the Great Winnipeg exposition the week before. Other herds competing for individual and herd honors were those of W. W. Brown, Sam Fletcher and David Clark & Son. The Aberdeen-Angus breeds were exhibited by J. D. Bacon, Grand Forks, Frank Sanford, Rogers, McFarland & Connor of Valley City and L. H. White of Cogswell, Mills & Sons and Cronk showed Herefords.

Greater interest was taken at the State Fair this year than ever before in dairy cattle. Some exceptionally good cows were exhibited by Mr. J. H. Bosard of Grand Forks. His herd bull is perhaps the best in the state. S. S. Moen and others exhibited good dairy cattle. It is gratifying to note that the farmers of the state are taking a greater interest in the dairy business as the years go by. A talk with these people who are raising Jerseys on their farms and keeping careful milking records cannot but convince the most skeptical that the Jersey cow is a sure bread winner. The admirers of either beef, dual purpose or pure dairy cattle had the privilege of seeing some of the finest stock of these respective types. These exhibits are certainly of great value to the farmers from a practical educational stand point. Tho thousands of farmers attended the State Fair this year it is to be regretted that there were not more who were willing to take a few days off to inspect the best that can be produced in the state.

This is especially true when you con-

sider horses. Every farmer uses horses and when he comes to such excellent specimens as Sir Hildebrand and the rest of the bunch shown by Donald Campbell of Hannaford, and the excellent string of Percherons shown by Ellison and sons of LaMoure he cannot but stop and take notice.

The exhibits in the swine classes were not so extensive as we should like to have seen them. However, there were some good representatives of the Yorkshires, Poland China, and Mr. J. H. Bosard of Grand Forks showed some very choice Berkshires.

L. H. White was the heaviest exhibitor, having brought several carloads of show stuff from the Envilla Stock farm at Cogswell especially for the benefit of visitors of the fair. Mr. White deserves much credit for the part he has taken in encouragement and development of the registered stock business in North Dakota.

The farmer who aims to keep up-to-date and in touch with the best in farm machinery missed it if he did not see the elaborate display of machinery in the building provided especially for that purpose by the association. The best in drills, plows, cream separators, engines, threshers were on exhibition with competent men to explain the working features of each. The exhibit of threshing and plowing machinery was without doubt the best ever held in the state.

The Canadian government had a very neatly arranged exhibit of grains, grasses and other products of the Canadian Northwest. Mr. Pilling who had charge of the exhibit and who represents the Canadian government at Grand Forks informs us that there are several million acres of good lands still unoccupied in the Western provinces. Good homesteads can still be secured and additional lands can be bought adjoining.

The State Fair visitors had the privilege of a rare treat in the exhibit of the state as shown by Commissioner Gilbreath. Practically every product of North Dakota soil was shown and was well worth going miles to see. The finest kind of grains, grasses, pottery, etc., were shown. To those who saw this remarkable exhibit of the products of the state, there can be little doubt as to its future. Farmers seeing the best that can be grown are inspired with a desire to go back home and grow a better grade of grains and perhaps begin growing some that he has not grown before but that have been proven profitable.

As a whole the fair was a great success and we have every reason to believe that every farmer will find it to his advantage to plan to attend the State Fair next year.

Richland County FAIR

Wahpeton, N. D.

SEPTEMBER

24, 25, 26, 27, 1907

\$3000 in Premiums.

\$1500 in Race Purses.

\$1000 for amusements.

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Fargo, N. D., June 20, 1906.

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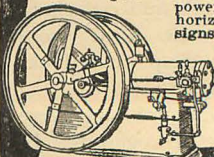
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PRESIDENT ROOSEVELT'S ADDRESS AT LANSING

A Tribute to the Farmer

Continued from June

The corner stones of our unexampled prosperity are, on the one hand, the production of raw material, and its manufacture and distribution on the other. These two great groups of subjects are represented in the National Government principally by the Departments of Agriculture and of Commerce and Labor. The production of raw material from the surface of the earth is the sphere in which the Department of Agriculture has hitherto achieved such notable results. Of all the Executive Departments there is no other, not even the Post-Office, which comes into more direct and beneficial contact with the daily life of the people than the Department of Agriculture, and none whose yield of practical benefits is greater in proportion to the public money expended.

But great as its services have been in the past, the Department of Agriculture has a still larger field of usefulness ahead. It has been dealing with growing crops. It must hereafter deal also with living men. Hitherto agricultural research, instruction, and agitation have been directed almost exclusively toward the production of wealth from the soil. It is time to adopt in addition a new point of view. Hereafter another great task before the National Department of Agriculture and the similar agencies of the various states must be to foster agriculture for its social results, or, in other words, to assist in bringing about the best kind of life on the farm for the sake of producing the best kind of men. The Government must recognize the far-reaching importance of the study and treatment of the problems of farm life alike from the social and the economic standpoints; and the federal and State Departments of Agriculture should co-operate at every point.

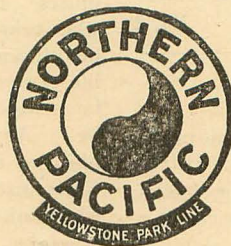
The farm grows the raw material for the food and clothing of all our citizens; it supports directly almost half of them; and nearly half the children of the United States are born and brought up on farms. How can the life of the farm family be made less solitary, fuller of opportunity, freer from drudgery, more comfortable, happier, and more attractive? Such a result is most earnestly to be desired. How can life on the farm be kept on the highest level, and where it is not already on that level, be so improved, dignified, and brightened as to awaken and keep alive the pride and loyalty of the farmer's boys and girls, of the farmer's wife, and of the farmer himself? How can a compelling desire

to live on the farm be aroused in the children that are born on the farm? All these questions are of vital importance not only to the farmer, but to the whole nation; and the Department of Agriculture must do its share in answering them.

The drift toward the city is largely determined by the superior social opportunities to be enjoyed there, by the greater vividness and movement of city life. Considered from the point of view of national efficiency, the problem of the farm is as much a problem of attractive-

ness as it is a problem of prosperity. It has ceased to be merely a problem of growing wheat and corn and cattle. The problem of production has not ceased to be fundamental, but it is no longer final; just as learning to read and write and cipher are fundamental, but are no longer the final ends of education. We hope ultimately to double the average yield of wheat and corn per acre; it will be a great achievement; but it is even more important to double the desirability, comfort, and standing of the farmer's life.

MINNESOTA STATE FAIR



HAMLIN

Week of Sept. 2, 1907

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North Dakota Farmer

AND SANITARY HOME.

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PROF. W. B. RICHARDS, Livestock.

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Vol. 9 AUGUST, 1907 No. 2

CONTROLLING PRICES

In our last issue we stated some of the reasons which seemed apparant to the editor, why it would be impossible or impracticable to control the prices of a crop like wheat. We have received several letters, condemning us for taking this stand. It seems, however, to the writer, that great problems of this character, need to be carefully studied and looked at from all sides. The writer believes that the statements made in a former issue of this paper with regard to the controlling prices for wheat, are based upon good and sound logic and that only within certain very narrow limits, can the farmer expect to control the prices of such a crop as wheat. He can, however, see that he receives his full share of the price at which wheat retails. He can see that the middle man does not defraud him, that he gets proper grade, that he gets full measure. He can determine to some extent, the time at which he shall dispose of his grain, and so in a measure, take advantage of the best price that can be secured.

If instead of wheat, the farmers of North Dakota should decide to regulate the price at which flax should be sold, they are in a better position to secure their demands, for it is said that 70% of the flax grown in the United States, is produced in North Dakota. Even if 50% is grown in the state, then it would be possible in a considerable measure, to control the price of the product, because the surplus which would prove the controlling factor, is in the hands of a comparatively few men and we should have conditions more like certain manufacturing interests,

where organized bodies are able to dictate the prices.

EMBALMING MEATS

A great deal has been said during the past few years with regard to the use of chemical preservatives in meats. North Dakota, several years ago, condemned the use of sulphites and prosecuted dealers using sulphites in meats, such as sausage and so-called Hamburger steaks. At the time there was a great deal of discussion as to whether the sulphite as present in the meats in such small quantities, would prove injurious to health.

The writer has always maintained that there was not any question but what harm always resulted from the eating of meats which had been treated with sulphites. Recently Dr. Vaughan of Michigan University, has most emphatically condemned the use of sulphites. He says, "The meat vendor who takes the risk of disturbing the health and possibly of destroying the life of one of his customers, deserves to be treated as any other criminal should be." Again he says, "The acid sulphite of Potassium and Sodium, sometimes used as a preservative, causes when taken internally, even in doses of 15 grains, vomiting, pain in the bowels, loss of appetite, and diarrhea. He calls attention to the fact further, that the use of sulphites gives to whole and partially decomposed meat, a fresh red appearance and thus enables the seller to deceive the buyer and the consumer alike. It enables the seller to dispose of an article which, in its natural condition, he could not have induced any purchaser to take.

DO CREAMERIES SPREAD DISEASE?

Just at present there is a great deal of discussion with regard to the manner of spreading diseases, especially tuberculosis, and several journals are claiming that tuberculosis is being spread very largely thru the medium of the creamery. While whole milk is brought to the creamery and separated, and the farmer takes back the skim milk to be used upon the farm, either as feed for pigs, calves or chickens, it is seldom that he secures the milk from his own herd, but rather he takes an equal quantity from the vat, which may represent the milk of any number of herds.

Among these may be herds suffering from tuberculosis, and the disease germs may be in the milk and thus carried to a remote farm where there was no indication of disease previous to this.

From the foregoing, it is evident that it is possible that much of disease might be spread in this way. The only safe means would be to have the milk

returned to the farm, properly sterilized so as to insure the destruction of all disease germs. This is a matter, together with the proper sanitary conditions that should receive more attention than has been accorded the matter in the past. We cannot afford to take any risk and it would seem that a great risk was being taken where this method of distributing milk is practised.

CROP OUTLOOK

At the present writing the outlook for the grain crop in North Dakota, is for an average yield. In the Valley, the crop will average much better than for the preceding four years. In some other parts of the state the yield will be good, while in some localities the crop will be small. This year, the value of good cultivation and the keeping the land in proper condition, is clearly indicated when we examine the crop in several localities. Adjoining farms may in one case, give a yield of 20 bushels to the acre, while the neighbor, thru careless methods of cultivation, will be glad for a harvest of 10 bushels.

STRAW FOR GAS

If the waste products from the farm, straw, corn stover, cobs, etc., could be properly utilized for fuel, probably then North Dakota would produce fuel material to supply the needs of a large part of our country.

It has been claimed recently, that a process has been patented whereby straw, corn stalks, cobs, etc., may be cheaply and readily converted into fuel gases. The Lincoln Journal gives a description of a test that has been made and if accurately reported will prove of great value to the country at large.

It was claimed in these tests that one ton of the refuse produced 5,000 cubic feet of fuel gases, and that the product produced on a residue from cobs was the equal of coke. Let us hope that this is not wholly a pipe dream, but that in practice it may prove to be a success.

Elihu Root, secretary of state, in an address to the Yale students said that the railroad managers are coming to recognize the rights of the public, and he believes a better era is forthcoming. Mr. Root says the exposure of the Alton deal was a good sign of the better conditions which are due. Let us hope he is right. Conditions as regards railroads and the public have been one-sided long enough. A little more equitable treatment will be a good thing not only for the public, but the roads as well. —Exchange.

SLOWER TIMES EXPECTED.

Business shows a few signs of slackening after the boom conditions which have prevailed for several years. The first symptoms are seen in the scarcity and high rates for money for loaning purposes and for investment in bonds and other securities. Railroads and other large corporations, finding money hard to get at reasonable rates, are forced to cut down their plans for new work, thus throwing some workmen out of employment and lessening the future demand for certain lines of iron, steel and other products. After the railroad people and metal workers, other classes are likely to feel more or less the pinching process resulting from scarcity of capital and the feeling of hesitation in the business world.

In fact, boom times are nothing but a process of turning spare money into the making of products and improvements. When the spare capital gives out for the time being, the industries must wait for more to accumulate, which means hard, or at least quiet, times in business.

The disturbances caused by the politics of the presidential election year already cast a thin shadow before. Business is nearly always slower during national election year. In 1900 the depression from this cause was not very serious and in 1904 business actually began to improve before election. It all depends upon the probable outcome of the election and the questions at issue.

If the effects of the coming campaign are no more disturbing than those of the two preceding ones, the slight halt in business may do no real harm. It may be well to slow up and let people take breath and save a little money. It will do the laboring class no harm to pause and reflect whether they are not asking too much in the line of more pay for less work, and whether there is in this direction a limit beyond which employers cannot go and still keep in business. During the next year or two there will, perhaps, be more men out of work and glad to take what they can get. Nobody as yet predicts real "hard times" like those of 1893 to 1897, but who knows? Such times occasionally begin when not expected. But whether the setback be mild or severe, it hardly looks as though the next year would be quite so prosperous as the past two or three. If a business depression comes, the farmers will feel it later and less seriously than other business classes, unless the present rather doubtful crop outlook should mark a bad yield of standard farm products.

In general, prolonged dull times, in

the later stages, finally result in lower prices for farm products and for the farms themselves. Just now prices of farms average high, and owners who wish to sell their farms may find the present a more favorable time than to wait. Otherwise, the average farmer may reflect that lower prices all round include lower cost for farm labor, machinery and supplies, so that a possible end of boom times may not be for him an unmixed evil. He could cut down the cost of his products, and could make various repairs and changes which he has long delayed because of the extremely high prices of labor and materials.—American Cultivator.

WHAT THE GOVERNMENT IS DOING FOR AGRICULTURE

A summation of the work of the Reclamation Service to January 1st shows that it has dug 1,267 miles of canals, or nearly the distance from Washington to Omaha. Some of these canals carry whole rivers, like the Truckee River in Nevada and the North Platte in Wyoming. The tunnels excavated are 47 in number, and have an aggregate length of nine and one-half miles. The service has erected 94 large structures, including the great dams in Nevada and the Minidoka dam in Idaho 80 feet high and 650 feet long. It has completed 670 headworks, flumes, etc. It has built 376 miles of wagon road in mountainous country and into heretofore inaccessible regions. It has erected and in operation 727 miles of telephones. Its own cement mill has manufactured 70,000 barrels of cement, and the purchased amount is 312,000 barrels. Its own saw mills have cut 3,036,000 feet B. M. of lumber, and 6,540,000 feet have been purchased. The surveying parties of the service have completed topographic surveys covering 10,970 square miles, an area greater than the combined areas of Massachusetts and Rhode Island. The transit lines had a length of 18,900 linear miles, while the level lines run amount to 24,218 miles, or nearly sufficient to go around the earth.

The diamond drillings for dam sites and canals amount to 47,515 feet, or more than 9 miles. Today the service owns and has at work 1,154 horses and mules. It operates 9 locomotives, 223 cars and 23 miles of railroad, 39 stationary engines and steam engines. It has constructed and is operating 5 electric light plants. This work has been carried on with the following force: Classified Service, 380, including Washington office. Laborers employed directly by the Government, 3,500; laborers employed by contractors, 6,100, or a total of all forces of 10,000. The expenditures now total nearly \$1,000,000 per

month. As a result of the operations of the Reclamation Service eight new towns have been established, 100 miles of branch railroads have been constructed, and 10,000 people have taken up their residence in the desert.

WHAT WILL BE THE RESULT?

Are we drifting toward a financial panic, or are we simply getting rid of an overgrowth in stock valuations? This is a question of great importance to the farming community in every part of the country. They are not dabblers in stock, but every period of financial depression affects them injuriously. During the past ten years there has been a steady increase of farm values. In some sections this increase has been more marked than in others, but the increase has been felt everywhere. The wonderful prosperity of the country has operated to make an increased demand for farm products, and it follows naturally that when prosperity turns to depression the farmers will feel it very sensibly.

As a guide for the future it may be profitable to learn, if possible, the true cause of the recent slump in prices of stocks shown by the New York market, but for the present the cause is not of so much consideration, as whether the slump is to continue until we face a panic. Never in the history of the country has there been so large a per capita circulation; neither has there ever been so great a volume of business of every kind. So it is not the want of increased circulation, or of an increase in the volume of business that is needed to avert a panic. It has been charged, on the one hand, that the slump in prices has been manipulated by the railroad magnates with a view to scare off legislation; on the other hand it is charged that it is due to the radical attitude of the president and of many state legislatures. If it is due to either one of these two causes it will soon remedy itself—the railroad magnates cannot afford to sacrifice very many millions to scare off a possible ghost, nor can the president and legislatures afford to bring on a panic that will sweep the country by pushing legislation to the extreme. Many shrewd observers, however, see in the situation, something more than legislators and railroads. They are the pessimists who cry out that no country can always be prosperous, and that days of adversity are necessary to counterbalance things. One thing is safe to do for the farmer, and that is, prepare for the days of adversity, so as to meet them with the best possible face if they do come, and if they do not come the farmer is that much better off for the preparation. —Rural Spirit.

Pure Food Department.

All Matters Pertaining to Foods will be Discussed in this Department

THE MECHANICAL AND CHEMICAL EFFECT OF MILK ON THE HUMAN

By Arthur E. Gue, M. D.

Milk is the normal secretion of the mammary glands of all mammals, and the milk of all mammals has a similar composition, consisting of fat, sugar, albuminoids, mineral constituents, and small quantities of other compounds. The milk of the cow has been studied in greater detail than that of any other animal on account of the extended use of this animal's milk and the products derived from it as human food. Our knowledge of the chemical composition of cows milk is indeed very complete, while studies, more or less incomplete, have been made of the milk yielded by woman, the goat, the ass, the mare, and the sheep. While there may exist a wide difference in the sustaining qualities of the mammary secretion of different animals as applied to man, this difference will be found not only in the chemical properties of the milk, as given by chemists, but we will also add that there is a mechanical effect which milk produces on the human tissues that must not be lost sight of, there is also a vitality which the animal has which produces the milk that is essential, this vitality is marked by certain characteristics which are all important and to which we will refer later. Briefly our scheme is to show the mechanical and chemical effect of milk on the human, and why the Holstein Friesian cow is the food producing ideal. While the chemistry of the different constituents of milk is only in its infancy and it may seem premature to discuss such at this time, still for the purpose of this paper it will be quite necessary to hint at some of the obscure truths. A word first as to the individual constituents of milk, the fat for instance is of peculiar and complex composition; it differs from other fats in that it contains compound glycerine, it exists in milk in small globules and each globule is surrounded by a true membrane, now this last is a proven fact and I would ask you not to debate it for the present but bear it in mind for future use in the study of this paper.

The sugar in milk is also of peculiar nature; that of the cow's milk is called "lactose," or, more commonly, sugar of milk. It is generally assumed that all milk contains the same sugar, and while it may be so, it is a fact that the sugar of one animal seems to have a property

not found in that of another, for instance—the sugar of the milk of the mare has the property of easily undergoing alcoholic fermentation, a property not possessed by the sugar found in cow's milk, so also is it a fact as stated by Carter that the sugar of the human milk, is not identical with that of the milk of the cow tho the properties seem to be the same. Again we find that milk sugar exists in several modifications which are distinguished from each other chiefly by their behavior under certain atmosphere, even polarized light being sufficient to break up milk sugar into a modification of itself. Our present knowledge of the albuminoids of milk is far from complete, tho much work has been done on the subject, this is due to the fact that it is extremely difficult to obtain these compounds in anything like a state of purity, the milk albuminoids are bodies of complex composition

containing carbon, oxygen, nitrogen, hydrogen, phosphorous, and sulphur, the way in which these elements are combined is not known, but that they exist differently in the milk of different animals is a fact borne out clinically rather than chemically, it is this fact that undoubtedly suggested the comprehensive term "Vitality" to Prof. Carlyle as related by Mr. Cortelyou in his address of the 20th annual meeting of the Holstein-Friesian Association, it was this fact that Prof. Holt had in mind when he said that in infant feeding there is a difference among the different breeds, it may be slight but that difference is shown on the delicate human organization and to my mind he must have had the Dutch cow in mind when he said, select a large, strong, healthy cow and the little difference will not be noticed, and follows up by cautioning the student concerning the fact that tuberculosis is more common in the Jersey than in any other breed. Taking up once more the albuminoids, we repeat that they differ in the milk of different animals, they may be divided broadly into two classes, those like the cow and the goat which give a curd

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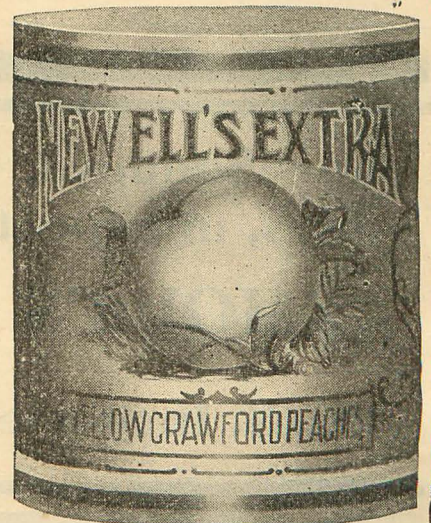
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on the addition of an acid, and those like the human and the mare which do not. Now the curd found in the cow is composed of casein, which is composed in the main of earthy phosphates, the presence or absence of which causes the difference in the albuminoids of the two classes. Besides casein there exists in all milks a second albuminoid called albumin; this differs from the casein by not being precipitated by acids, but will be coagulated by heat. There are other albuminoids described in milk, but enough has been said excepting to allow me to reiterate that the elements found in the albuminoids vary in different animals and this without disturbing the general complex make-up of the milk.

Salts: Henkel and Bechamp are about the only authority, they admit the presence of potassium, calcium, chlorides, phosphates and magnesium; Henkel has gone so far as to find an organic acid (described as Citric acid) which he has found at times in some samples of milk, and while this result is not universally accepted, for the sake of future reference please keep this point in mind. If you can only see with me that the atoms composing the different elements of which we have been talking are so delicately arranged, and the molecules built up in so complex a manner that they cannot be disturbed, you would then understand how even a slight change in some one element would make a vast change in the whole. This is so to such an extent that in the large percentage of cases where the milk is modified the child or invalid does not thrive. By some writers it is said that the reason that the milk of Jerseys does not agree with subjects of low vitality is that it is so rich in fat that when in combination with the digestive ferments produces a substance that is absolutely toxic, this I feel is not quite true, the difference we will find to be a physiological and mechanical derangement, physiological

in the fact that it is impossible for the large membranous covered fat globule of the Jersey to crowd thru the microscopical cells of the digestive organs which they do when assimilation is perfect, and if forced will indeed produce an active mechanical irritation resulting in numerous disturbances of the alimentary tract, while with the Holstein's milk the fat globules are so small that they readily pass by endosmosis thru the cellular tissue. Prof. Holt in his summary from figures compiled from sixty thousand analyses collected by Mr. Gordon of the Walker-Gordon Milk Laboratories made from the American grades and common natives says, leaving out the Jerseys, the average of the different breeds of cows are remarkably uniform in their total solids, now if it is a fact that there is little difference in the component parts between the Holstein and other dairy breeds, wherein are we to lay claim to this superior Vitality in the Dutch milk, in two ways, first, the chemical combination of all the elements of the milk, in one breed this combination will produce one result, while in another breed these elements combined will produce entirely different results, in other words in one breed these elements are happily combined, while in others these same elements are opposed. How is this so? Well just as one manufacturing pharmacist will make a certain preparation composed of two or more ingredients, the results when given to the body are good, another pharmacist analyzes the product and prepares as he thinks the same, but the result on the body is disastrous. Why? Because there is that lack of what is known in medicine as a happy combination, now so it is between the different breeds, it would be so easy—al tho all the elements are present in a certain milk there might be that lack of harmony which would change the final sum. For instance diamonds and charcoal, chemically the same, but such

a gross difference in the completed substance. Now what would produce this lack of harmony in the different elements of milk in the several breeds (another claim to superiority) i. e., the breed itself, the quality in a breed is one of the most important factors, and that which influences most of all these factors is first the duration of the purity of breeding without admixture of alien blood, and second the uniformity of type, and the inherent vigor of that type. It is doubtful if any breed of cattle has been bred pure for a longer period than the Holstein, and the inherent vigor of the breed is indisputable, it matters little with what breed or type a Holstein bull is mated the offspring is almost sure to resemble the sire markedly in characteristics, particularly in color, now I speak of this prepotency because it is the vital factor in holding all of the delicate arrangement of the molecular formation of milk in happy relationship. On the other hand take a breed of delicate constitution, nervous and predisposed to all outside influences are they not more apt to cause an unbalanced condition of all those elements that go to make up the milk. If this is not so then how are you going to explain the fact where a hospital full of patients (ranging from infancy to old age) fed on the milk of a certain breed, no matter how diluted or modified failed to thrive, but when changed to the milk of the Holstein-Friesian a marked change was shown. I do not think I am presuming too much when I say that it would not be unreasonable to expect in two different milking breeds where all the elements of this great chemical combination are practically in the same proportion, yet one ingredient not up to standard, (low grade of phosphorus or poor sulphur for instance) would sacrifice the whole. In other words the difference in the digestibility of one cow's milk over another is dependent upon the difference in their molecular arrangement and not whether

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they are rich in fat or not, the tie is not far distant when the Boards of Health and city governments will insist not on a high grade of fat, but on a high grade of solids, a fine-molecular combination and few bacteria, as most hospitals do now. Right here, it might be patent to add, that a Walker-Gordon representative replied in answer to my question—if left with no other means of feeding infants than raw cows milk, what breed would you choose, "Holstein" because it comes nearer a balanced ration than any other. To the Holstein breeders I will say you have in your breed all that can be desired for the production of a pure food product, to say nothing of other grand qualities, so don't waste your time trying to breed an absurdly high per cent of fat to the detriment of inborn qualities, qualities that have made the Holstein-Friesian the head of all dairy breeds.

THE PRICE OF PURE FOODS AND DRUGS

The pure food law, says Wallace's Farmer, which has now gone into effect in the nation and in a number of the states, will not cheapen the price of food and drugs by any means. It will rather tend to advance prices, for the simple reason that pure foods and drugs cost more than adulterated.

Before these laws went into effect there was no special inducement to any manufacturer to provide the community with pure food, while there was every inducement for the adulterator to palm off adulterated food as pure; as, for example, buckwheat and shorts for pure buckwheat, a combination of honey and sugar for pure honey, mustard and some cheaper product for pure mustard.

The purchaser can now know what he is getting. He knows the price of pure food. There is no law against his buying the adulterated article for less money; but the law compels the adulterator to state the composition to tell the truth.

There is no profit in adulterating unless you can deceive the customer and make him believe he is getting a better article for less money. One of the great aids to the adulterator is the craze people have for buying things cheap, the bargain counter itch to which the maker and vender of adulterated goods has pandered. He does not have what we want, but he has something "just as good," and cheaper. You take his word for it and buy it because it is cheaper.

Even at an advanced price you get more for your money under the new law than you ever secured under the old. All this from the standpoint of cost. No one can measure the benefits that will come to the general pub-

lic on the score of health. Our people have been dosed with impure drugs, sold at a little less than the price of honest goods, until the foundation has been laid for evil habits which last a lifetime, and for diseases which carry off precious life and to this extent destroy the vitality and power of the nation and the race.

These pure food laws have come none too soon. They will no doubt need to be amended; but the nation and the various states have made a great stride forward when they have enacted a law which compels the merchant to sell things for what they are; in other words, to quit lying about his goods directly or indirectly, and incidentally to quit stealing or giving people less than their money's worth.

The influences which have prevented the adoption of these laws for years past, and especially the national law, have been very powerful. They will do all they can to render the law inoperative; but in the end it will be sustained by the common sense and conscious integrity of the American people.

JELLIES

Of the small fruits currants make the best jelly. Blackberries also make a good jelly if gathered when not quite ripe. The glasses for jelly should be as hot as the jars for canning and should be prepared in the same manner. The jelly should be poured into them while hot and set uncovered in the sun for an hour. If there is no sun, allow them to remain in the kitchen for the same length of time. Always let preserves and canned goods thoroughly cool before storing them. Therefore it is wise not to put them away until the next day.—Jewel Bulletin.

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Shade Trees and Gardens.

C. B. Waldron, N. D. A. C., Editor.

Last year our cabbage was destroyed by worms, the eggs were laid by a small white butterfly. The butterflies have again made their appearance and we don't want to lose our cabbage. Can you, tell me what will kill the worm.

An early reply will be very much appreciated by,

Yours truly,

J. W. CARROLL,
Soldiers' Home.

Lisbon, N. D., July 17, '07.

ANSWER.

Replying to your inquiry of July 17th, I will say that the method practised in cabbage growing regions to kill the cabbage worm is to spray with Paris-green as one does for potato bugs. It is important to apply the poison in the form of a fine misty spray so that it will not run off the leaves. Another remedy is to mix white hellebore and prethium in equal parts. To one part of this mixture add eight parts of flour and dust it on the plants with a bellows early in the morning when they are wet with dew. We have also succeeded pretty well with hot water, heating the water to 170 degrees as tested with a dairy thermometer. It is then applied directly to the plants in ordinary sprinkling cans. This kills the worms that it strikes and does not injure the cabbage.

Very truly yours,

C. B. Waldron.

Sherwood, N. D. June 22.
(Twp. 163, Range 84)

Dear Sir:—A nursery agent from Ohio has been in this neighborhood taking large orders for a tree he calls "black locust." I have not seen it mentioned among the trees you recommend for N. D. and am inclined to think the tree is not suited to our climate. I am not interested in any nursery company but as a farmer have a common interest in the improvement of the prairie and would like to warn the neighbors I can reach against fraud. You would oblige me greatly by giving your opinion on the "black locust."

Also kindly send me bulletins containing tree-planting especially for school-grounds.

What grass would you recommend as

lawn for school-ground? Watering lawn is out of question.

Respectfully yours,

G. A. Esval.

SHERWOOD, N. D., June 27, '07.

Mr. G. A. Esval,

Dear Sir:—Replying to your inquiry of June 22nd, I will say that the black locust is not hardy in North Dakota. It has been tried repeatedly at points further south than this is and has always proved a failure.

I would also say that it is very poor policy to patronize traveling tree agents. One should make his purchases direct from some reliable nursery. Of course, some of these nurseries have their salesmen traveling through the country, but they are on a different basis than the tree agent who sells his trees to the farmer and gets them where he can get them the cheapest, regardless of the quality of the stock, or the suitability of the trees for the climate in which they are to be planted. A man buying trees with the understanding that they are hardy in his region cannot be compelled to pay for the trees if they are sold under misrepresentation. On the other hand, the farmer has means of knowing what trees are hardy in his locality, and he should find out before making his purchases. After the purchases are made and the money turned over, or any part of it, I doubt if he could recover it.

I have received a number of letters like yours and cannot see why farmers will persist in swindling themselves by making purchase of things they know nothing about when they can obtain the knowledge free by simply writing to the Experiment Station.

I mail you under separate cover our bulletins Nos. 41 and 59, in which you will find a list of trees suited for North Dakota.

I should sow brome grass for lawn on school-grounds. Our lawns about the barns here are of that kind of grass, and we find it very satisfactory. It keeps green under all conditions and resists the encroachment of weeds, while, at the same time, it will withstand tramping better than any other grass that I know of.

Yours very truly,

C. B. Waldron,

SOME ADVANTAGES OF TIMBER CULTURE TO THE NORTH DAKOTA FARMER

By Geo. P. Grout, A. C., N. D.
In Dairy Record

In this new state where wheat raising monopolizes the time and energy of the average farmer, it is hard to impress upon the minds of our residents the value and necessity of growing timber. The seasons here are short and when spring comes every prosperous farmer allows nothing unavoidable to prevent him from getting in his wheat crop. In the fall with threshing and fall plowing to be done, the land owner hardly has time to think of tree planting, to say nothing of doing the work. Of course in winter he can think about tree culture and that is all. Unless the necessity of it can be driven home to him with the force of a sledge hammer, busy as he is, he will think somewhat as did the farmer who was once asked why he did not shingle his home. His answer was: "When it rains I cannot, and when it is dry I do not need to."

One of the most important means to the further improvement of the state of North Dakota is the growing of timber. That the advantages of it are numerous, no one with good, sound judgment will attempt to dispute. We will, however, touch upon only a few of them. The most important advantage is the effect it exerts upon the climatic conditions. As shelter from cold wind alone, timber is worth far more than it costs to cultivate it.

It is hard for any one not having had much experience with trees to realize the difference a good wind break makes. The wind is such a variable quantity that it is easy for a person to imagine when driving to some sheltered spot, that it has merely quieted down a little. Of course one raised to the prairie really knows nothing except in theory as to the value of wind breaks, and can listen to some one theorize at length without fully appreciating it.

A person who moves from a wooded country to North Dakota accepts the wind as a part of his new surroundings. He has been so used to looking upon trees as a very slow natural growth, that he does not turn his mind towards timber culture, because in his estimation it will take too long to reap results. To impress thoroly the immense value of timber for wind breaks about the home of the farmer, it is only necessary to spend a few days on a farm where the house is located some distance from the barn, and one of the two

is surrounded with a good wind break, while the other is on the open prairie. One is then compelled to face the wind two or three times a day, going back and forth from the house to the barns, and, if it is a really cold day, and the wind is blowing even a little, he will actually have to fight to keep from freezing in the open space tho going but a short distance, while he can work with comparative comfort in the shelter of the trees for a long time.

A comparison of the soil in a dense forest with that of the open prairie furnishes us with much information as to the value of timber culture. The soil in the forest freezes only to a very shallow depth, while on the open prairie it freezes as deep as three or four feet. This is not due entirely to the fact that the timber gives off heat in winter, but the atmosphere is held in place better in the timber and clouds passing over large wooded districts move much more slowly than on the open prairie. The heat, therefore, which is given off is retained in close proximity to forests.

Forests, then, tend to equalize the temperature in winter, but this process is not only going on in winter, but also in the heat of the summer. The evaporation which takes place in the timber, and the shelter from the hot sun which we speak of as shade, have a cooling effect on the atmosphere in forests. It is a physical truth that cold tends to condense moisture, therefore cool air arising from the timber and coming in contact with warm currents laden with moisture tends to be precipitated in the form of rain. We may then note the fact that the rainfall in timbered regions is greater than on the prairie. Forests also tend in many ways to distribute the moisture more nearly as we need it. Because the atmosphere is held in place better where there is timber as explained above, the wind does not have the same chance to pile up snow, but leaves it distributed on plowed fields and high lands as well as in the timber, where it can melt and run into the ground instead of rushing off in floods.

The roots of the trees run down into the ground and form openings, thus aiding the moisture to make its way into the ground.

We reason from the above statements that timber assists in preventing floods as well as in conserving

the moisture. If the floods are held in check, erosion cannot go on to the same extent and not only does timber prevent erosion by assisting in holding the floods in check, but the roots forming in the soil tend to hold it together, thus preventing the particles of dirt from floating off in the water in case of heavy storms. A large amount of leaf mold is formed every year under the trees, which causes the soil to become spongy and to absorb the moisture readily. The water sinks into the ground and comes out here and there in cool, refreshing springs, for example, in western Wisconsin, east of St. Croix Falls there are many large springs which seem to originate in the timber. The more springs and streams, the greater the rainfall and the better the drainage in a country, because valleys and ravines are cut thru low places.

Timber has a tendency to prevent excessive electric storms, as the electricity from the earth passes up thru the body of the tree and off from the leaves, thus making the tree a gentle conductor.

It is clear from points brought out that timber tends to make a country warmer in winter, cooler in summer; tends to give more moisture where moisture is needed, but at the same time assists in preventing floods, thereby reducing erosion. Tree culture tends to prevent hard storms of every kind and thus makes a country not only more desirable to live in, but also more profitable for agriculture and fruit growing. The benefit of shelter for stock raising cannot be overestimated.

CLINGS TO THE SEED HUMBUG

Congress clings to the absurd old method of free seed distribution, notwithstanding the opposition of all the influential agricultural interests. While the free seed matter is not a question of prime importance, says the American Cultivator, it is, nevertheless, a little discouraging to those who have been active in the matter for years, to note the contemptuous manner in which the House of Representatives refuses to make any improvement in the system, but turns down, without discussion, Secretary Wilson's proposition to spend the money in distributing seeds that were really new and promising.

It is plain that the congressmen who voted to continue free seeds cling to the system because it places distribution in their own hands and gives them a chance to favor voters without cost to themselves. Secretary Wilson's plan puts the distribution under control of the department as it ought to be. The Department of Agriculture has lately been collecting new things from all parts of the world, new fruits and salad plants from Japan, new kinds of alfalfa, cotton, grapes, cherries, crab apples, oranges and various new forage plants. It has only \$40,000 for such work in comparison with the \$248,000 which is squandered by Congress in distributing garden seeds that could be bought for a few cents per package at any grocery. It can not be long before the intelligence of the American farmers will force a more progressive policy upon their representatives at Washington.

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Robert Burgess & Son, Wenona, Ill.
Oltmanns Brothers, Watseka, Ill.
J. W. & F. L. Peterson, Litchfield, Minn.

CATTLE

Shorthorn

James Austin, Hannah, N. D.
W. W. Brown, Amenias, N. D.
Winn Brothers, Redwood Falls, Minn.
Sanders Brothers, Farmington, Minn.
E. C. Butler, Cooperstown, N. D.
J. W. Crawford, Wahpeton, N. D.
F. W. Harding, Waukesha, Wis.
F. J. Dickerson, Medford, N. D.
James O'Hara, Lanesboro, Minn.
D. J. McLean, Cokato, Minn.
John Donnelly, Grafton, N. D.
N. P. Clarke, St. Cloud, Minn.
S. Fletcher, Matteson, N. D.
A. C. Gallup, Fairmount, N. D.
Frank Hammond, Bismarck, N. D.
S. G. Eliason, Montevideo, Minn.
Thomas Hecker, Carrington, N. D.
H. A. Nelson, Ray, N. D.
M. D. Kiser, Rogers, N. D.
Wm. Laplant, Jessie, N. D.
Stern Brothers, Fargo, N. D.
C. H. Ferrier, Dover, Minn.
Andrew Laughlin, Lisbon, N. D.
J. S. Anderson, Atwater, Minn.
D. W. McCanna, Cando, N. D.
A. K. DeJong, Marion Junction, S. D.

T. H. Canfield, Lake Park, Minn.
J. S. Peterson, Crete, N. D.
J. B. Powers, Power, N. D.
Luke Stannard, Taylor's Falls, Minn.
H. A. Strutz, Holmes, N. D.
W. J. Turnbull, Harwood, N. D.
Finlay McMartin, Claremont, Minn.
John B. Armstrong, Hannaford, N. D.

Hereford

J. H. Whitchee, Valley City, N. D.
Jeremiah Growley, Broncho, N. D.
Cargill & Price, LaCrosse, Wis.
R. W. Dickey, Ellendale, N. D.
H. F. Eaton, Oakes, N. D.
Massingham & Cosgrove, Harmon, N. D.
A. Edmunds, Caledonia, N. D.
A. J. McInnes, Dazey, N. D.
F. B. & H. W. Gannon, Ellendale, N. D.
R. A. Hasse, Tappen, N. D.
H. Jacobsen, Fingal, N. D.
H. J. Johnson, Oakes, N. D.
Movius Brothers, Lidgerwood, N. D.
J. C. Mills, Hannaford, N. D.
W. L. Richards, Dickinson, N. D.
Roach, Wold & Keck, Rutland, N. D.
Whitchee Brothers, Valley City, N. D.
E. O. Tade, Wheelock, N. D.

Aberdeen-Angus

R. A. Candor, Cogswell, N. D.
O. S. Chase, Mott, N. D.
G. W. Foogman, Grafton, N. D.
Geo. L. Lillie, Sergius, N. D.
Geo. A. McFarland, Valley City, N. D.
M. F. Merchant, Ellendale, N. D.
Frank Sanford, Valley City, N. D.
Stern Brothers, Fargo, N. D.
N. Upham, Grafton, N. D.
L. H. White, Cogswell, N. D.
Eastgate Brothers, Larimore, N. D.
J. W. Reedy, Beresford, S. D.
J. P. Williamson, Havana, N. D.
L. A. Wood, Valley City, N. D.
C. M. Perry, Aldrich Av., Minneapolis.

Galloway

G. J. F. Teal, Cooperstown, N. D.
W. C. Clark, Gladstone, N. D.
G. W. Dycon, Cooperstown, N. D.
Andrew Laughlin, Lisbon, N. D.

Red Polled

O. A. Austin, McVill, N. D.
J. H. Bacon, Grand Forks, N. D.
J. W. Martin, Gotham, Wis.
J. A. England, Kenmare, N. D.
C. G. Falt & Son, Monango, N. D.
A. H. Laughlin, Lisbon, N. D.
R. E. McHugh, Dresden, N. D.
J. W. Mitchell, Wheatland, N. D.
H. M. Tucker, Courtney, N. D.
C. A. Hall, Cooperstown, N. D.

Jerseys

J. H. Bosard, Grand Forks, N. D.
J. A. Colby, Gardner, N. D.
Rev. S. Currie, Park River, N. D.
J. P. Ebersole, Upham, N. D.
M. N. Johnson, Petersburg, N. D.

SWINE

Poland China

C. F. Gummert, Renville, Minn.
Baker Brothers, Fairmount, N. D.
O. R. Aney, Wilmot, S. D.
W. W. Brown, Amenias, N. D.
John Zeug, Walnut Grove, Minn.
E. C. Butler, Cooperstown, N. D.
Winn Brothers, Redwood Falls, Minn.
Crandall & Danforth, Randolph, Minn.
John Donnelly, Grafton, N. D.
S. Fletcher, Matteson, N. D.
O. S. Jones & Co., Madison, S. D.
L. A. Knoke, Willow City, N. D.
Axel W. Peterson, White Rock, S. D.
A. S. Hawkes, Waseca, Minn.
S. A. Moore, Fargo, N. D.
E. H. Schutt, Fairmount, N. D.
E. J. Cowles, West Concord, Minn.
J. A. Englund, Kenmare, N. D.
J. L. South, Casselton, N. D.
Brown Brothers, Vermillion, S. D.
C. E. Stowers, Wheatland, N. D.
Herbert Willard, Glyndon, Minn.
J. K. Campbell, Slayton, Minn.
John DeVaney, Waverly, Minn.
H. H. Bonniwell, Hutchinson, Minn.

Berkshires

J. H. Bosard, Grand Forks, N. D.
W. S. Corsa, White Hall, Ill.
J. O. Hertsgaard, Kindred, N. D.
John Stafford, Crystal, N. D.

Yorkshires

T. H. Canfield, Lake Park, Minn.
Frank Willis, Marletta, Minn.
G. A. Forgerson, Rosemount, Minn.

Duroc-Jersey

Fargo Edgewood, Fargo, N. D.
W. E. Olive, Worthington, Minn.
Riverview Farm, Mandan, N. D.
L. L. Butler, Webster, S. D.
E. W. Smith, Buffalo, N. D.
J. E. Sparks, Jr., Armour, S. D.
L. H. White, Cogswell, N. D.
A. K. DeJong, Marion Junction, S. D.
S. O. Mason, Red Wood Falls, Minn.

Chester White

James Austin, Hannah, N. D.
P. M. Burke, Crystal, N. D.
C. E. Budlong, Albert Lea, Minn.
C. A. Gallup, Fairmount, N. D.
A. E. Thompson, Hannah, N. D.
L. C. & V. A. Hodgson, Luverne, Minn.
James Fisher, Eastman, Wis.

SHEEP

Oxford Down

J. C. Mills, Preston, Minn.
Eastgate Brothers, Larimore, N. D.

Shropshire

C. E. Stowers, Wheatland, N. D.
Chandler Brothers, Kellerton, Iowa.
Geo. H. Smith, Amenias, N. D.
Geo. McDerrow & Sons, Pewaukee, Wis.

Live Stock Department

PROF. W. B. RICHARDS, Editor

DAIRYING AND THE CREAM SEPARATOR.

By C. E. Danielson,
Cream Separator Expert,
Jamestown, N. Dak.

We are living in a state that is capable of yielding a much larger income to the farmer than he is receiving under the present system of farming. North Dakota is a great state for offering opportunities to poor people and people with limited capital and a good many families could improve on the situation by moving in here. A large number that are here could better their condition by adapting a little different method of farming. Large fortunes

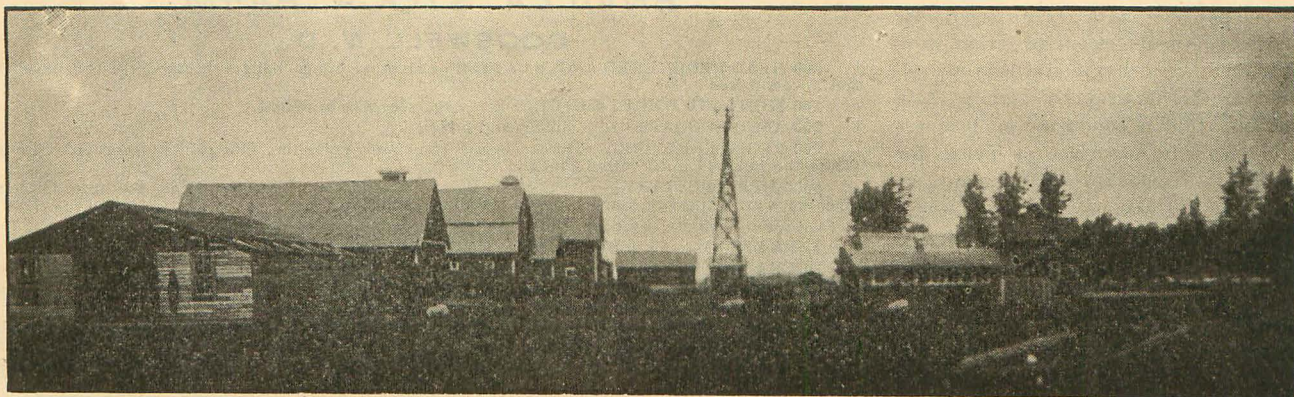
ing to be entirely dependent on wheat or grain raising? Shall we continue until we are forced into something more certain or profit by the experience of our neighbors and make preparations that will make us independent of large crops? What is to be done? What did they do in Minnesota, South Dakota and other states?

They did not all move to town to start general stores, banks, newspapers, hotels, cigar stands, etc. These institutions could not exist without the farmer. After much worrying and planning they discovered that they had a friend to fall back on in the old cow that they had kicked and cursed for years. What did the cow do for them? In a few years time she wiped

ing pay and something must be done to bring about a change. If we do not make a radical change let us make it gradually and be prepared when the wave comes our way. Do not be afraid that the bottom will drop out of the butter market if you go into the dairy ter are being exported every year to foreign countries. Chinamen are learning to eat butter and by the time four hundred millions of them know how we will never be able to make enough. The Oleomargarine industry is completely controlled and the makers of the stuff will never be in position to flood the market.

Farming land in a dairy country is worth from 50 to 125 dollars or more per acre. Why not make this country a dairy country?

In the East several creameries are to be found in every county, sometimes one in every township. They were formerly operated on what is called the "whole milk" system and some of them retain that system yet, especially



Farm of Stern Bros., Near Argusville, N. D.

have been and are being accumulated in this state but the average farmer is hard up, not to say broken ten months in a year. What has the future got in store for the exclusive grain raiser? If he is piling up wealth to such an extent that he can stand two or three years failure, or would it be wise for him to turn his attention to some other source of income? Is the soil so constituted and will the climate conditions remain such that large crops can be raised from year to year or will the proposition confront us some day as to what is to be done to save ourselves from being stranded on the rocks.

Those of us who are familiar, through experience or history, with conditions as they existed in our neighboring states years ago, know that wheat farming was kept up so long that a good many farmers were practically starved out and had to seek other fields. How much longer are we go-

out all old debts, removed all mortgages and prosperity took the place of poverty. Pretty soon the old folks moved to town where they are living in modern, up-to-date houses, while their children are spending their time alternately in College and on the old homestead. Daily mail, telephones, and in many instances, electric railways are at their service. The young people are accomplished in all branches of learning and music. A piano and up-to-date furniture is to be found in every farm house parlor.

It may be too early to start creameries in some parts of our state, but it is certainly not too early to prepare for what is sure to come. We have some good creameries but in order to make the best use of our natural advantages, we must have more. Dairying with a majority is a secondary consideration or looked upon as a side line. Under these conditions we are not in a position to make mixed farm-

where the country is thickly populated and where each farm contains only forty or eighty acres. Under the "whole milk" system the patrons take their milk to the factory every morning, which takes a good deal of time and they lose the value of the warm skim milk for feed for the young stock and hogs. This is quite an item and the hand separator has proved a paying investment, even to patrons who are within easy reach of the factory machine. Besides the value of the warm skim-milk for feed it is a saving of time and labor, as they have only one can of cream to take to the creamery in place of five or six cans of milk and as a rule every other day is often enough to bring the cream. However, the oftener the cream is brought, the more certain will be a good product.

In this state the hand separator is the only salvation as the farms are as a rule too large to make the hauling

of milk profitable, without taking into consideration the value of the warm skim-milk for feeding purposes, as stated before. The hand separator creamery can be run at a less expense than the whole milk factory and as a much larger territory can be covered the expense will be divided between a larger number if not several times as many patrons.

For some time to come we cannot make it pay to establish creameries too close, but the transportation of cream is very cheap, so if you are not within reach of a creamery take the cream to your station and ship it to the nearest point until you get a creamery in your own neighborhood. I would not encourage the centralizing system, but a creamery that has not proper support is more of a detriment to the dairy interests than an advantage. A plant located in Mandan, Bismarck, Dickinson, Carrington, Minot, Williston, Devils Lake, Grand Forks or Fargo, etc., could hardly reach monopolistic proportions as they would be in competition with each other. As long as the management of either were reliable I would not hesitate in recommending the shipment of cream. Any creamery that is conducted on business principles can pay just as much for cream as a large Storage Company, so if you have a creamery be sure to support it. Stay as close to home as possible and help build up your own locality.

In the use of a hand separator thorough cleanliness is a necessary factor in producing a good and keepable quality of butter. It should be washed every time it is used, immediately after the skimming is completed as the longer it is left the harder it is to get clean. The practice of washing the separator only once a day, if it exists, should and must be abolished. Some day such practice will be subject to a fine. It not only spoils the quality of the cream and butter, but is liable to interfere with the quality. If a plow does not scour it will not do good work. If a separator bowl is coated with slime and dirt, it will not work on the milk as well as a clean bowl. This is especially true of hollow bowl machines and with some of them it is even necessary to stop during a long run and clean the bowl.

Regarding the merits of cream separators, there are numerous different makes on the market, but very few of them have demonstrated any principle of separation or practical servability to warrant their purchase. They all make brave assertions and offer inducements in price, but there is as much difference in separators as there

would be in a 90 and a 17 jewel watch, and what would apparently be saved in the purchase price would be lost several times over in the operation and durability of the machine. A right selection in the first place will save you a lot of time, worry and expense in the future.

There is one kind of contraption on

Buying a Cream Separator

A little thought before buying a cream separator will save you a lot of hard work later on. Don't be talked into buying a machine with a high milk supply can—it's like pitching hay to pour milk into one. Besides it does n't cost any more to get an easy running



U.S. Cream Separator

with a low milk tank that a child can reach, a simple bowl that's easily washed, and a set of entirely enclosed gears, protected from dirt and danger. The U. S. holds the **World's Record** for clean skimming—it is the most profitable machine for you to buy, and will last a life time. Our handsome new catalogue describes in detail the operation and construction of the United States Separator. Many fine and accurate illustrations aid in making perfectly clear to you the advantages the U. S. has over all others. If you're keeping cows for profit, ask for our catalogue No. 438 It points the way to the biggest profits.

VERMONT FARM MACHINE CO.,

Prompt Delivery.
18 Distributing Warehouses.

BELLOWS FALLS, VT.

453

ENVILLA STOCK FARM, COGSWELL, N. D.,

200 HEAD REGISTERED ANGUS CATTLE—Calves, yearlings, bulls and cows of the best breeding and lowest prices.

150 SHETLAND PONIES AND GRADES—Any color, size or weight.

300 ANGORA GOATS—Kids, billies and nannies.

250 REGISTERED HOGS—Duroc Jersey, Improved Yorkshire, Hampshire, Improved Chester White and Poland China. Bred gilts and young pigs.

5000 HEAD POULTRY—All varieties: Rocks, Wyandottes, Leghorns, Reds, Brahmas, Orpingtons, Houdans, Minorcas, Games, Javas, Hamburgs and Bantams.

GEESSE—Toulouse, Embden, Buff, Chinese, African and Canadian-wild.

TURKEYS—Mammoth Bronze, White Holland and Buff.

DUCKS—Pekin, Muscovy, Wild Mallard, Indian Runner and Rouen.

PEA FOWLS, PHEASANTS, PEARL AND WHITE GUINEAS, FANTAIL PIGEONS—Birds and eggs from above varieties. Some choice cockerels. Baby chicks one day old.

RABBITS, HARES, GUINEA PIGS, SQUIRRELS, COONS, ANGORA CATS, WOLF, FOX AND RABBIT HOUNDS. COLLIE DOGS.

Write us for complete price list of varieties. Remember we won 90 per cent of the Blue Ribbons the last two years at the State Fairs. Order your eggs for hatching, pouly and stock of

ENVILLA STOCK FARM,

Cogswell, N. D.

L. H. WHITE, Proprietor.

WHITE

PORTABLE AND STATIONARY GASOLINE ENGINES

Vertical and horizontal designs, all or water cooled, four cycle type, self cleaning adjustable igniters with early and late spark adjustable automatic ball governor of throttling or hit-and-miss types, sight feed gasoline vaporizer. All parts interchangeable. More than 100 designs. Self contained or with tanks detached. Economical, durable and easily repaired. Catalogue free. Globe Iron Works Co. Menomonie, Wis. Box 6

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PEDIGREED LIVE STOCK AND LARGE FARM SALES.

REFERENCE: Any pure blood breeder in the Northwest.

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Devils Lake, - - - - - North Dakota

FOX TERRIERS, BEAUTIES.

(Thorobred) **DUSKY TRAP STRAIN,**
Colors Black, White and Tan,
Buff and White,
Tan and White.

"DEAN FARM"

Box 182, Mayville, North Dak.

the market sold under the name of "separators" that are, plainly speaking, nothing but a fraud. They are called the Dilution, Automatic or Gravity and sold from 6 to 15 dollars, but they are not any more efficient as a means of separating cream from milk than a common shotgun case costing from 46 to 95 cents. Catchy and mis-

leading advertisements are published, but you will not find them advertised in a reliable dairy paper.

I quote the following from unquestionable authorities:

Prof. A. L. Hocker, Professor Dairy Husbandry, Agricultural Experiment Station, Lincoln, Neb., writes: "The so-called 'tin can' or 'water' or 'web-footed' separators are considered and rightfully so a fraud and a deception as they go under the name of separators and are literally diluting cans which retard rather than improve the process of gravity cream separator. No reliable agricultural paper would think of receiving ads from these fraud machines. The lightning rod is not to be compared, I believe, with the water separator."

Prof. J. W. Hart, Dairy Dept., University of Illinois, Urbana, Ill.:

"My opinion in regard to these machines is that they are usually bought by farmers under the impression that they are in reality cream separators. Many farmers think in buying that they are getting something new and in a way superior to centrifugal separators in that no work is necessary to get the cream as in turning a hand separator. If a farmer wishes to use the deep setting process he had better buy the ordinary deep setting cans which he can get at from 50 cents to \$2.00, the highest being the price of the best or Cooley cans. You will not find reliable dairy journals advertising these articles. They have been shown up in several experiment station bulletins as a humbug."

Do not throw away your good money just because you are getting something cheap. The best is the cheapest in the end. If you buy the separator you ought to buy, you will always be a satisfied user. The future protection you get when buying a standard separator is worth more to you than most cheap machines accepted as a gift.

Time will tell what it will be necessary to do, but in the meantime make the best of the situation and improve as much as you can on the cow and regard her as a pet, and not as a necessary evil.

HOLSTEIN FRIESIAN CATTLE.

By MALCOLM H. GARDNER.

Owners and breeders of Holstein-Friesian cattle base their claims for the superiority of this breed over all other dairy breeds mainly on the following points: First, that the Holstein-Friesian is a large, strong, vigorous cow, full of energy and abounding in vitality; second, that her physical organization and digestive capacity is such that she is able to turn to the

best advantage the roughage of the farm, converting the same into merchantable products; third, that she yields large quantities of most excellent milk, fit for any and all uses and especially well fitted for shipping purposes; fourth, that heredity is so firmly established through her long lineage that she is able to perpetuate herself through the production of strong, healthy calves; and fifth, that when for any reason her usefulness in the dairy is at an end she fattens readily and makes excellent beef.

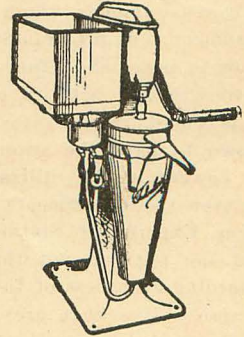
While men usually engage in the dairy industry for the profits directly and indirectly to be obtained, and not for the health's sake or for the pleasure therein, yet the aesthetic side of any business should not be lost sight of; for in the breeding of Holstein-Friesians all of these objects may be attained, the owner deriving such pleasure and satisfaction from the ownership of fine animals as can in no way be measured in money.

It is a self-evident fact that the Holstein-Friesian is a large, strong, vigorous cow, and needs no demonstration; but many persons have never stopped to consider the value of this vigor and vitality in a cow. Would a man select a small, weak, puny human nurse for his infant child? and if he should so do, would he expect the child to thrive and grow strong and vigorous on her milk? But in what respect does the need for vitality in the cow differ from like need in the human nurse; is she not the widely chosen foster-mother of the human race? How careful, then, should we be in the selection of this foster-mother.

Nature looks keenly to the welfare of her children; and it is incontrovertible that she has seen to it that the milk of the human mother is such as is best fitted for the human race. By analogy, then, that breed of dairy cattle which produced milk nearest in its constituent parts to human milk produces milk best fitted for the consumption of man; while a milk illy balanced as to fat content, as compared with human milk, is unsuited to the best development of mankind. Of all the dairy breeds, the milk of the Holstein-Friesian most nearly approaches that of the human mother; and it is therefore especially fitted for the use of infants, children and invalids, giving health and strength to all. As human milk is not high in average per cent of fat, so Holstein-Friesian milk, in approaching it, does not as a rule contain as high a per centage of fat as does the milk of some of the smaller dairy breeds which yield milk in very limited amounts; but owing to the very

Because You Need The Money

It's your business and if you don't attend to it, who will? You cannot afford to keep cows for fun. That isn't business, and, furthermore, it isn't necessary. There is money in cow keeping if you go at it right, and besides there is more fun in going at it right than there is in staying wrong.



You need a Tubular Cream Separator because it will make money for you; because it saves labor; because it saves time; because it means all the difference between cow profits and cow losses.

Look into this matter; see what a Tubular will do for you and buy one because you need it.

How would you like our book "Business Dairying" and our catalog B.135 both free. Write for them.

The Sharples Separator Co.
West Chester, Pa.
Toronto, Can. Chicago, Ill.

Aberdeen Angus Herd For Sale.

On account of professional duties I must close out my valuable herd of Angus. Herd has been headed by that royally bred imported prize bull, Prince of Auchterarder, one of the best stock getters of the breed. All young stock sired by him.

At five leading fairs this year my Bonnie Brae herd has won more blue ribbons than all its competitors combined.

Seventy head to choose from, Thirty-five breeding cows, twenty choice heifers, ten young bulls, the head of the herd and several calves.

Will sell in lots to suit and make prices that will move them. Or, will exchange all or part of them for North Dakota land.

GEORGE A. MCFARLAND, Valley City, N. D.

HEREFORDS FOR SALE

Three Good, Young, Registered Bulls.

COLE & LORD,

Egeland and Cando, N. D.

THE SILVERDALE FARM

A. J. McINNES, Prop.

PURE BRED CLYDESDALE HORSES

PURE BRED HEREFORD CATTLE

YOUNG STOCK FOR SALE.

Dazey,

North Dakota

Registered Red Polled Cattle

Young stock of both sexes for sale

C. G. FAIT & SON, MONANGO, N. D.

large average quantity of milk yielded by it, no breed excels the Holstein-Friesian in production of butter-fat.

It has been stated by some who have not well considered the matter, that the value of milk is measured by its fat content; but this is only partially true even in butter making. From a nutritive standpoint, the fat is the least valuable part of milk; it is the solids not fat that give its value. The milk of the females of the horse and ass, herbivorous animals whose muscular development is of prime importance, is very low in per cent of fat; yet the health, strength and activity of their progeny is noted. Swine are universally known to have the strongest of digestive powers in the utilization of all food; yet the experiments at the Connecticut Experiment Station show that even the pig can not thrive on milk containing an excess of fat. Holstein-Friesian calves that are suckled by their dams thrive amazingly; and it may be safely assumed as a fact, that the milk of any dairy breed which can not safely be fed to the young calf is not suited for human consumption.

The globules of fat suspended in the milk serum of the H.-F. cow are small, and do not as readily separate and rise as cream as do the fat globules of the milk of some other dairy breeds, thus making H.-F. milk ideal for consumption as whole milk and for shipping purposes; while, as the modern centrifugal separator will readily extract the fat from any and all milk, it is in no way inferior for cream-selling and butter making. Also, if for any reasons it be necessary to increase the per cent of fat in the milk, in order to reach any standard thoughtlessly required by the laws of the State, milk may be standardized to any per cent of fat by the use of any separator.

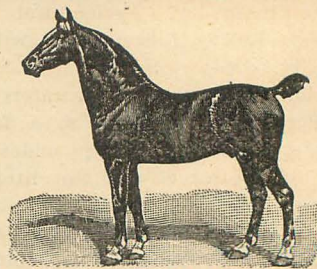
Owing to her large frame, her vigor and digestive powers, the H.-F. cow is unequalled in the ability to convert farm roughage into money value; and she belongs to that class of large cows which the Wisconsin Experiment Station found, after years of experience, to be the most profitable for the dairy farmer. She is of hardy constitution, not readily susceptible to tuberculosis and other bovine diseases, and will thrive under adverse circumstances to which a smaller, weaker breed would succumb. Her calves come strong and vigorous at birth, often weighing in excess of 100 lbs; and, owing to the milk being especially fitted for making the best animal growth, make the best and most profitable veal. It is the special function of the H.-F. cow to produce milk, and while in milk she

can not be readily fattened as she devotes all her surplus food to profitable milk production; yet when dry her great assimilative powers are still available, and enable her to take on flesh rapidly, and so make excellent beef.

The time is fast approaching when even the Western farmer can not afford to keep a cow mainly for the calf which she produces; as in such case the handicap against beef production is too great. When a calf takes practically all the milk its dam yields, it starts out in life with a mortgage upon it to the value of the cost of keep of its dam for one year; and this debt, as well as the cost of raising, must be repaid out of the selling price before there can be any true profit in the beef. If the owner of such cows plan to milk them, run the milk through a separator, sell the butter-fat to a creamery and feed the skim milk to the calves, he introduces the labor factor and finds himself a full fledged farmer-dairyman, with all the labor incidents to dairying, and cows that will

Warranted to Give Satisfaction.

Gombault's Caustic Balsam



Has Imitators But No Competitors.

A Safe, Speedy and Positive Cure for
Curb, Splint, Sweeney, Capped Hock,
Strained Tendons, Founder, Wind
Puffs, and all lameness from Spavin,
Ringbone and other bony tumors.
Cures all skin diseases or Parasites,
Thrush, Diphtheria. Removes all
Bunches from Horses or Cattle.

As a Human Remedy for Rheumatism,
Sprains, Sore Throat, etc., it is invaluable.
Every bottle of Caustic Balsam sold is
Warranted to give satisfaction. Price \$1.50
per bottle. Sold by druggists, or sent by ex-
press, charges paid, with full directions for
its use. Send for descriptive circulars,
testimonials, etc. Address

The Lawrence-Williams Co., Cleveland, O.



Oak Grove Shorthorns.

We have a fine lot of young bulls from 6 to 13 months old, females all ages, open or bred to Baron Violet, Lorne Campbell, or Minas Beau, the stock bull, and all three are prize winners. Prices reasonable. Come and look them over, or write to

DAVID CLARK & SON,

Bottineau or Towner, N. D.

BOSARD FARM JERSEYS

LOTTIE MELIA ANN'S KING,

Son of the Great Fifteen Thousand Dollar Bull, Melia Ann's King, has Ten Tested Sisters, Among Whom Are,

DOVE MELIA ANN, who at three years old gave 1705 lbs. of milk in 42 days, about 43 lbs. per day, and made 18 lbs. 11 oz. butter in a week,

ELOISE MELIA ANN, who milked over 40 lbs. per day, and made 17 lbs. 12 oz. butter in a week, at three years.

MELIA ANN OF LONGVIEW, who as a two-year-old, milked 45 lbs. in a day, and made 15 lbs. ½ oz. butter in a week,

LOTTIE MELIA ANN, his dam, has a record of 21 lbs. 2 oz. butter in a week, 9250 lbs. milk in a year, 25120 lbs. milk in three years, and is the dam of three tested daughters.

PEER'S SURPRISE, a sister of the sire, holds the world's record for both milk and butterfat in an authenticated year's fat test; 14452.2 lbs. milk, 643.61 lbs. fat, or 769 lbs. butter.

EMMA'S ROWENA, an inbred Melia Ann, stands second to Peer's Surprise, 10383 lbs. milk, 760 lbs. butter.

SOME OF HIS SONS FOR SALE.

Address, J. H. BOSARD,

GRAND FORKS,

NORTH DAKOTA

hardly yield enough to pay for the extra work. Over and above all labor and the cost of keep, the average Holstein-Friesian cow will show a nice profit on the butter-fat she produces; while the skim milk will not only rear her own calf, but a couple of litters of pigs besides.

An ideal beef form has been created in the mind of the public, and a false prejudice engendered against anything that does not agree in form with that ideal. At present this unjust prejudice militates against the dairy bred steer on the hoof, even though he be as well reared as the beef steer; although when it comes to the final show down at the block, the difference between the two is not great. Rear a Holstein-Friesian steer as a Short-horn is reared, and he will indeed be an expert judge who can distinguish the beef when it is placed before him at the table; while repeated tests at the block have proved that the percentage of choice cuts is nearly as large in the one case as in the other. As an all-around breed, and the one approaching the nearest to the long-desired dual purpose animal, the Holstein-Friesian is unsurpassed.

Aside from the aesthetic point of view—the personal satisfaction one gets out of the possession of fine stock, there is decided financial advantage in the breeding of pure-bred H.-F. stock. It costs little more to keep than does common or grade stock, and the returns on the labor invested and the food consumed are so much greater in proportion that there is no comparison. By the use of a good, pure-bred H.-F. bull, and the rearing of his heifer calves from common or grade cows, one may be reasonably sure that the calves so reared will so far surpass their dams in productive capacity that the excess will many times reimburse selling value of the cows themselves; but by the use of pure-bred H.-F. dams also, the danger of failure in producing a fine dairy animal almost vanishes, and one may be nearly certain that every female dropped will not only prove valuable in the dairy, but that she will also prove valuable as a producer of pure-bred dairy stock of both sexes. For, aside from the milk product, there are two other sources of income in the pure-bred H.-F. dairy,—one from the bull calves, the other from the surplus female stock. There is a constant demand for good pure-bred H.-F. bulls for the improvement of the common dairy herds of the country by grading, and for the further improvement of grade herds by higher grading; while anything especially good is sought by the breeders of pure-bred stock. The

less valuable surplus females find a welcome place with the farmer-dairyman, the more valuable as foundation stock for new pure-bred herds, while the best are eagerly sought by established breeders to strengthen their breeding herds.

The system of Advanced Registry devised and established by the H.-F. Association places all breeders on a par, rendering it very easy for any business. Immense quantities of but-breeder to establish the value of a pure-bred cow, just as the mile track will establish the value of a trotting-bred horse, and the expenses is very moderate. The Association not only charges nothing for the entry of such cow and her record in the advanced Register, but to encourage the breeder in that direction it pays out every year large sums of money in prizes; the chance for the winning of a prize being open to every owner of a Holstein-Friesian cow. Neither do the State Agricultural Colleges make any charge for their oversight in the matter of making these records, their only charge being for the time and necessary expenses of their supervisor sent out to oversee the testing; and as several cows may be under test at the same time, the expense per animal may be made light. A little over two years ago the H.-F. Association in-

creased the efficiency of its system by the authorization of official records to be begun not less than eight months after calving; and many breeders are taking advantages of this plan to show the staying qualities of their cattle, the results proving very satisfactory indeed. Prizes are awarded for the best records made in the regular seven-day division, in the thirty-day division, and in the eight-months division; and any breeder may win three prizes in each division, or nine prizes in all.

In a limited article of this kind, it is only possible to touch upon the more salient points of the Holstein-Friesian breed, and I would refer interested readers to the H.-F. Brown-Book, sent free by Secretary F. L. Houghton, for more detailed information; but from my own individual experience with this grand dairy breed, extending over a period of more than twenty years during which time I have been a breeder of these cattle, I can affirm that, either as an all-around dairy breed or for any specialty in 'dairying,' when the returns from all sources are counted I know of no breed superior to the Holstein; Friesian while for veal and supplying of good, healthy, nutritious milk to cities and villages, there is no breed that can approach it.

LOOK YE HERE

Go to any of our dealers and buy a package or pail of Guarantee Stock Food, take it home and use it according to direction, to any animal for a test. Pick out your worst specimen on the farm if you like, and after a fair trial should you not be fully satisfied with results, let us know and we will return the money.

Guarantee Stock Food

contains ingredients that will surely benefit your animals, not only while you are feeding but also after you quit feeding. This is no theory only, but facts founded on knowledge, experience and practice, and can be verified by thousands of our customers.

Guarantee Stock Food Company,

GRAND FORKS,

NORTH DAKOTA

HELLENDALE SHORTHORNS

Fifty head of High Grade Heifers, 7-8 and better, for sale. All bred by our best bulls, at prices that will enable any farmer to start a No. 1 herd for little money.

The best chance for a good thing ever offered N. D. Farmers. For prices and other information write to J. B. Power, Power, N. D.

THE TUBERCULINE TEST

The tuberculin test has now been before the country for many years and proved itself of great value to the cattle raiser. Some object to its use, but in such cases it may well be suspected that the objectors have cattle or have had cattle that were shown to be tuberculous by the test. It has interfered with many a man selling his cattle for what he expected to get for them. It has also shown to the public that some of the herds of dairy cows were tuberculous, when their owners desired that fact to be kept hidden. The men *therefore* whose herds have the dreaded disease are frequently the men who object to the tuberculin test. They say that it is not reliable as it has shown that their cattle are tuberculous when they know them not to be tuberculous. It is astonishing how much trust some people have in their own cattle. They prize them so highly that they cannot accept the belief that tuberculosis is among them.

ANGORA GOATS.

Angora goats are now attracting much attention in many parts of the country and particularly from owners of rough, brushy land due to the ability of the goats to readily clear and reclaim such tracts and thus materially enhance their value.

Mohair, the fleece of the Angora, is in greater demand than for a number of years and much higher prices are prevailing in the Eastern markets than for several seasons. New mohair mills are in operation and greater competition is now shown in the purchase of the domestic clip. The importations of foreign mohair this year to supply the deficiency in the home production promises to exceed the 2,625,575 pounds imported from Turkey and South Africa in 1906.

Many American clips have commanded from 34c to 42c per pound this season, many of the female animals of these flocks shearing five pounds and the males eight to fifteen pounds.

For several years the United States Department of Agriculture has been advocating Angora husbandry as a very promising animal industry for this country. A recently issued bulletin from this Department entitled "Information Concerning the Angora Goat" should be in the hands of every owner of rough pasture or range land. The book may be had free of charge through Congressmen or Senators. It is illustrated and full of information of interest and value to one investigating this promising live stock industry.

The American Angora Goat Breeders' Association—the national organization of breeders of Angora goats—also has interesting literature relative

to Angora husbandry, it will be pleased to send to any one forwarding his or her address to Secretary John W. Fulton, Helena, Montana.

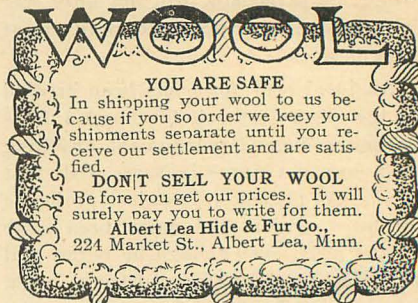
Registered Black Percheron Horses and Red Polled Cattle.

Yamagata, 40966, 1st premium, gold medal and championship at N. D. State Fair 1906.
Zip 13342, herd bull, first prize winner and sweepstakes N. D. State Fair 1905.

YOUNG STOCK FOR SALE.

CENTER LANE STOCK FARM,

Kenmare, N. D.



Among the Swine

O. R. ANEY, Wilmot S. D.

Give the pigs plenty of water and often.

A barrel filled with water and a stock fountain attached to it makes watering hogs easy.

This is a poor time of the year to neglect your hogs. But in all probability they will be neglected just the same.

The boy, unless he is interested, makes a poor hand to take care of the pigs, but still he will generally beat a hired man.

There should be plenty of trough room so that the pigs can all get their share of feed without crowding. the smaller ones as well as the larger.

Pigs need and should have a cool comfortable place to lie in in order to make a good growth during warm weather, but a hog wallow will not fill the bill.

There is no economy in scrimping the pigs on feed and trying to make a small amount lap over until the crop can be gathered, and then expecting to give them enough more, so they will make up for lost time. A hog, in order to be profitable, should be constantly on the grain.

The time to castrate pigs is when the knife is sharp. The idea that the signs of the Zodiac or the moon has any influence upon the operation or the pig either is all nonsense. What is needed is a good sharp knife, clean hands and some kind of healing antiseptic placed into the wound and every thing will go along all right. It is always best to perform the operation

before the feed; and if two feeds can be skipped, so much the better. Then a run in a good clean shady lot is all that is needed.

The feeder should keep an eye on his pigs daily, and see that they all come to the feed with a good keen appetite. If any of them act as tho they were not feeling right see to them at once, as it is easier to correct any trouble at first than after it gets well seated.

Constipation is the one thing to guard against. A dose of epsom salts or a feed of oil cake will put them on the right road in short order. All the organs must work freely and without hindrance in order to get the most out of the feed.

Buying the Boar.

This is a first class time in the year to buy the boar to head the herd for the next year. The crops of pigs among the breeders are small, and the strong demand for pork keeps hogs up to the top notch or to a price which is very satisfactory to the farmer. By buying now the pig will have plenty of time to get accustomed to his new home, and will be in good condition when the breeding season opens. The boar should be one that has a short nude head with a smooth coat and standing well on his feet, extra strong in back, with a well sprung rib and be possessed of good fleshing qualities as it is he who transmits the style and finish to the offsprings. Such an animal will add a great many dollars to the next year's pig crop for any farmer who has several sows to breed.

MARKET DEMAND FOR HOGS

Before the annual meeting of the National Association of Expert Swine Judges J. J. Ferguson of Chicago gave an illustrated lecture on the market demands of swine. In part he said:

"Of necessity packers can have no choice as to breed or color, since there is a place and use for every grade of hog coming to the Stock Yards. The market almost any day will show a range from the heavy sow or stag weighing 700 to 800 pounds down to the light shipper pig of forty to fifty pounds weight.

"The demand for hogs of various weights and the prices paid depend upon the market for lard and provisions. When the supply of lard is short the price of lard advances and consequently heavy lard hogs are in demand, with prices correspondingly advanced. If at any time the market for lard is slow and the supply ample the light-weight hog suitable for producing high-class hams and bacon will bring top prices.

"Under average conditions the hog worth the money in the open market will weigh from 200 to 250 pounds. He should be smooth and evenly covered, without any excess of fat over the shoulders, along the back or on the hams. Good length and depth of side is desirable since the side meat is cured into bacon, which sells for more money than any other part of the hog carcass.

"Those qualities most desirable in pure-bred hogs for breeding purposes are also in demand by the packer, viz., smooth, even quality, with even fleshing, and an absence of coarseness of any part or surplus development of bone.

"The tendency of the time is steadily toward lighter and leaner cuts of meat, so that, other things being equal, the farmer will find it much more profitable to produce the early maturing middle-weight packer hog above mentioned.

"In this connection it is interesting to note the leading experimental stations have clearly demonstrated that the gains made by hogs up to this weight—200 or 250 pounds—are made much more economically than those put on after the hogs have passed this weight."

WE WOULD PREFER AMERICAN PORK

At intervals reports come from Germany of the increases in the consumption of horse and dog meat. Latest reports show that during the year 1906

MAPLE GROVE STOCK FARM.

HOME OF THE GREAT J'S PERFECTION,



Winner of first prize at three state fairs. 150 March and April pigs extra large and heavy boned, sired by J's Perfection. He weighed 840 pounds. I have been breeding Poland Chinas 15 years and I have the greatest herd in the northwest. I sell my pigs at farmers' prices and guarantee satisfaction. Come and take your choice or write

W. J. GRAHAM, Howard Lake, Minn.

POLAND CHINAS

75 MARCH AND APRIL PIGS FOR SALE

If you want a boar to head your herd; one with strong, heavy bones and the best back and hames you ever saw on a spring pig, I have them for sale. My pigs have short broad heads and are extra well marked. Write for what you want. I am sure I can satisfy you. Pedigree furnished.

J. S. Bergquist, Dassel, Minn.

POLAND CHINA HOGS

I have the best lot of pigs I ever raised of fall and spring farrow. They are of the highest breeding, sired by such great boars as Impudence, Keep Sake, Improver, Chief Sunshine 2d, Keep On Meddler. My great herd boars, Minnesota Keep On, by the Old Champion Keep On, C. F. Perfection and others. I can furnish boars, pairs, or herds not related, to breeders or good farmers. My hogs are the kind people like: fancy, long body, good bones, broad back, well marked and easy feeders.

R. F. D. 5

C. F. GUMMERT, Renville, N. D.

WILLOW GLEN SHORTHORNS AND POLAND CHINAS.

The home of the Sweepstake's sow at Interstate Fair, Fargo, N. D., 1907. Herd headed by Chief Perf. 3rd sired by Chief Perf. 2nd the greatest hog the breed has produced. We have for sale choice spring pigs of both sexes by four different boars. Can furnish pigs not related. Have a four year old herd bull a grand son of Nominee and a eight-months old bull calf for sale. Prices reasonable, quality considered. Address

AXEL W. PETERSON,
White Rock, S. D.

WOOD LAWN CENTER POLAND CHINAS



75 PIGS AT FARMERS' PRICES. March and April farrow. They are the kind that grow big and bring big litters. They are sired by UN-DEFEATED CASHIER, weight 750, and PERFECTION KING, weight 500 at twelve months. Pedigrees furnished. Satisfaction guaranteed. Order now to save express. Come and see them or write to

JOHN DEVANEY, Waverly, Minn., On G. N. Ry.

WHETSTONE VALLEY

Stock and Poultry Farm

POLAND CHINA SWINE

SHORTHORN CATTLE

SHORPSHIRE SHEEP

WHITE WYANDOTTES

WHITE PEKIN DUCKS

SINGLE COMB WHITE LEGHORNS

WHITE HOLLAND TURKEYS

We still have a few choice pigs for sale sired by Sun-light 2nd and Best Goods and out of Matured sows. Also three fine bull calves six months old of the milking strain (Bates bred), which will be well worth the money to any good farmer. Also a choice lot of young poultry.

Long Distance Phone.

Express U. S. and Gt. N.

O. R. ANEY, - - - Wilmot, S. D.

IF YOU WANT GOOD STOCK WRITE US.

more than 182,000 horses were slaughtered for food and more than 7,000 dogs. There was an increase of 20,000 horses over 1905 and there was a slight increase in the number of dogs. The figures also show that while the consumption of cattle, hogs and sheep slightly fell off, there was an increase in the number of goats.

The increase in the use of these unusual foods is not so great, but is enough to show that the German population does not take to them with enthusiasm. It would appear that the use of them is rather forced by circumstances than by desire. It is also apparent that this class of meat is necessary to the sustenance of the poorer classes, because the price of cattle, hog and sheep flesh is now prohibitive.

It seems difficult to understand from an American viewpoint why these conditions are allowed to perpetuate themselves when the remedy is so easily to be found. A repeal of the German importing meat laws would have the effect of putting plenty of good, cheap wholesome meat, such as other countries use into immediate consumption, but the agrarian interests, which control the law-making bodies, are tenacious in their purpose of preventing

American meats going into Germany and, in the guise of protecting German live stock raisers, they are forcing the poorer classes to an increased use of such animals as horses, dogs and goats. —Live Stock World.

PLEASANT GROVE HERD Shorthorn Cattle, Poland China Swine

We are making a specialty this season of shipping spring pigs. By shipping when not too large the express bill is lighter. We can supply boars and sows not related. Write us for descriptions and prices.

WINN BROTHERS,
Redwood Falls, Minn.

POLAND CHINAS

We have for sale several choice spring pigs sired by "Giant Perfection" No. 3477, a grandson of Chief Perfection, the 2nd, the greatest hog the Poland China breed has ever produced.
CENTER LANE STOCK FARM,
Kenmare, North Dakota

GREENVIEW STOCK FARM

Has 100 Poland China young pigs, sired by Rockwell Chief, Corwin U. S. 2nd and Prince Corwin. Sows strongly bred of Tecumseh blood. Orders booked now for fall delivery.
Pure Scotch and Scotch Cross Shorthorns, Young and old stock for sale. Call or write if you want North Dakota bred Poland Chinas or Shorthorns.

E. C. BUTLER,
Cooperstown, N. D.

few of his very best birds, with some notable improvement in view when he made his selection, and this is what is to be understood by breeding yard. A few fowls put together by an experienced breeder or by an amateur, standard in hand, that the output from these few selected birds, may have in greater perfection what their progenitors were deficient in. This is the sole purpose always, and nothing but improvement.

We have heard quite frequently about "The Unattainable Standard," but there is nothing in it unattainable, it is true that we have all of us our discouragements, but they come to every breeder worthy the name, and who sets before himself a high ideal, which, is always a difficult task to reach. But not by any means unattainable. The Unattainable Standard; well even if it were unattainable, we shall have the satisfaction, that we did our best to measure up to it, and to do one's best, is all any man can do, and where it is done with an appreciation, of just what is wanted success will finally result and the needed improvement will be realized. In breeding we cannot have everything nor try to obtain everything, at the same time, for if we do we shall most certainly fail. It is a comparatively easy matter to keep a flock of average quality up to the average, but when we go beyond the average, the trouble, work, and yes, the pleasure begins.

Our ideal is before us, we know what improvement we want to make, but certain strongly developed points are necessary, in fact we cannot make the desired improvement without them. We have a large flock for instance, and from it we proceed to select our breeding yard, the flock looks handsome, never saw a better one, and the work of selection is begun.

One fowl after another is picked up and examined very minutely, and as we proceed, the flock grows less and less valuable.

Here is one bird which has the desired improvement in perfection, but

OUR BIRDS WIN

EGGS! 45 prizes at 3 shows, 15 varieties of Poultry, Ducks, Geese Turkeys. \$1.25 to \$1.50 per setting. Catalog free.
MANKATO NR'S Y AND P'LTRY YDS., Mankato Minn.

Don't Sell Your Eggs

WHEN THEY ARE CHEAP

Pack them with my new method; will keep two years, and be as fresh as new-laid eggs; no special place required to store them.

Costs only 1/2c per dozen to pack them. Write for circular.

Mrs. B. F. Wilcoxon, Ft. Des Moines, Ia

Poultry Department

By MRS. B. F. WILCOXON.

THE BREEDING YARD.

That the "Breeding yard" is the poultry fanciers stock in trade we are all of us ready to admit. Without it we might raise poultry but at the same time any definite improvement in fancy points utility, qualities, or both, would be very difficult of attainment if not an absolute impossibility.

That this is not well known is seen from what is generally called a breeding yard. With very many poultry breeders the breeding yard simply means a half or a whole dozen fowls, containing one male in the flock the birds may be the result of one or more setting of eggs purchased from some breeder the spring before, and as a good price was paid for the eggs the birds must out of necessity be all there it to be desired, that is, thus very many reason.

Now if nothing else were wanted than a flock of pure bred birds no one could find fault with their reasoning, and we are positively sure that is all the multitude desire, and all the trouble it cares to take in the matter of raising pure bred poultry. That year after year, eggs from such yards are shipped

all over the country, as eggs coming from fancy stock, and as far as it only means from stock breeding true to color, and breed characteristics this also is all right and mostly gives general satisfaction, where not a great deal of money is expended in the purchase of the eggs. But if this method is employed, with the idea that this is breeding fancy fowls, then such reasoning is very much at fault, as this is all that the market poulterer is doing, he uses pure bred stock, as well as the fancier, with this one exception, that he does not sell his eggs at fancy prices, to do this much more care and selection is necessary, and because of this a breeding yard is necessary. Not the kind of a yard as I've mentioned which simply amounts to the raising of pure bred poultry, but a breeding yard, and all that it includes.

In the jargon of the fancier breeding yard, stands for improvement, how often in conversation with a fellow fancier, we have heard him say, "I have one of the finest matings you ever saw" or "I wish you could see my breeding yards" what does he mean by this? That he has selected a very

it is so bad in some other respects, that little as our amateur knows about breeding, he knows that it would be madness to use it.

Here is another bird, all that could be desired, but in the particular point wanted it is lacking, and so we keep on, and out of every 200 fowls we have a few that come up to our idea of the desired point for which we are going to breed, and we almost hate to look at the larger half of the flock good as it was a little while ago.

But the end is not yet, for the next day, after another examination, we find still more that will not muster, and as day after day, our selected birds become fewer, and fewer, but at the same time better and better, we find ourselves, quit often in those two or three pens, and it is with almost a heartache, that we pick up another bird think it over, reason with ourselves against better knowledge, drop her on the floor, back again in an hour how queer it is, but that bird is the first one our eye falls on we pick her up again, look it over once more, heave a sigh and then carry her out to the other discarded ones. At feeding times we linger for a while among the few selected birds, what beauties they are. Next pen containing the birds that we cannot use for breeders, and as we open the door, there stands in front of us the bird set aside in the morning, how she looms up magnificently in that pen. We repent, pick her up again, almost fondle her, and finally put her back again among the selected few.

But that bird is making us uneasy, she goes to bed with us, and in the

morning is our first thought, we again weigh the consequences of our last nights doings go out to the pen and take her out again, to be gone forever. Have you ever had such an experience? If so, you know in part what it is to select a breeding yard, but when done, you will have a few birds anyhow, left from which improvement may be expected, and what is really worth bearing the name of breeding yard.

SPECIAL OFFER ON STANDARD-BRED POULTRY

Barred, White and Buff Plymouth Rocks; White and Silver Wyandottes and S. C. White, Brown and Buff Leghorns at only \$1.00 each. Eggs from all varieties at half price. Send me your order for either stock or eggs and I assure you that you will be more than pleased.

DAKOTA POULTRY FARM

A. K. Johnson, Kensal, N. D.

S. C. WHITE LEGHORNS

raised on

CHALLENGE POULTRY FARM

are prize winners and good layers. Eggs from hatching \$5.00 per 100. Incubator chicks \$1.50 per 12

A. N. LANGWORTHY, Prop.
Dodge Center, Minn

WHITE WYANDOTTE EGGS LESS THAN HALF PRICE.
\$1 per 13. \$6 per 100.
Our prices have always been \$2 to \$5 per setting, and the eggs are worth it, but we now have all the chicks we can care for and shall set very few eggs after May 1st. These eggs will be from our finest pens; from big, strong, vigorous, healthy, high-scoring profit-makers, that we have bred up by our system. They will hatch lots of chicks, strong chicks, that will make winners and layers and fill your pocket-book. We will ship promptly. The quality will surprise you.

WEST LAWN POULTRY FARM

E. C. Willard, Prop.
Mankato, Minn.
111 Moreland Ave.,

competed, as at Grand Forks.

Evidently the Valley City herd has taken more blue ribbons than all of its competitors together, after having been passed upon by five different judges. Mr. McFarland has raised all but two of the fifteen head comprising his show herd and of course feels much gratified over the results. It would seem that farmers desiring good cattle of this breed would make no mistake in patronizing the Valley City herd.

(Advertisement)

A SAVAGE ATTACK ON AN OLD RELIABLE FIRM.

"Look out for Griggs & Company", is the way the Northwestern Retailer commences a savage attack on that firm. The cause of this denunciation is a circular issued by Griggs & Company of St. Paul, to Harvesters and Threshers, offering them groceries and Harvester's supplies at wholesale price.

The Retailer says: "They are very unfair, and if allowed to proceed without interruption, will work much harm to the legitimate trade." Which strikes you as most fair? To force farmers to buy only through certain channels controlled by the Combination of dealers, or to allow them to purchase in any market, and of the firm that offers the farmer the best values for his money?

If Griggs & Company buy direct from producers for cash, and sell direct to farmers on the same terms, and thereby diminish losses and the number of hands their products must go through before reaching him, are they not lessening the burden of expenses and profits the goods must bear? They sell at lower price, because of the saving thus affected. Is that unfair to the farmer or consumer?

Griggs & Company are a firm of unquestioned standing; and have been one of the well known business houses in St. Paul for over twenty-five years, and this kind of "knocking" seems undignified, and a poor way of attacking a legitimate business house that is helping the consumer to get his goods at least cost.

It will pay you to write Griggs & Company, 409-411 Sibley St., St. Paul, for their Price Lists, and make a trial of their goods.

Mr. E. C. Butler of Cooperstown, N. D. informs us that he has a large number of choice spring pigs for sale. Mr. Butler owns some of the best Poland China stock in the country and if you are looking for some good pigs, bred and grown right here in North Dakota he will be pleased to give descriptions and quote prices.

AMONG OUR ADVERTISERS.

RECORD OF THE BONNIE BRAE HERD OF ABERDEEN ANGUS AT NORTH DAKOTA FAIRS

For several years Prof. G. A. McFarland of Valley City has been building up a herd of Aberdeen Angus cattle and this year has made a notable record in North Dakota show rings. The following summary of his winnings at the various fairs appears in the Valley City Daily Times Record:

Cooperstown offered sixteen first prizes. Bonnie Brae competed for fourteen and won thirteen of them; besides it won two championships out of four and one grand championship out of two; six seconds, three thirds and one fifth, competition in every class from another herd.

Valley City offered sixteen firsts. Bonnie Brae tried for fourteen and won

eleven. Also it took two championships out of four, won six seconds, five thirds and a fifth with competition in every class.

Jamestown offered sixteen firsts. Bonnie Brae competed for fourteen and won thirteen of them. It took besides, two of the four championships, and one of the two grand championships, five seconds, two thirds and one fifth, against competition in every class.

At the Grand Forks state fair ten firsts were offered. Bonnie Brae tried for eight and won four. Besides it took one of the two grand championships and a large share of the other premiums. Four herds competed in almost every class.

The Fargo inter-state fair offered twelve firsts. Bonnie Brae competed for ten of them and won five. It took one of the two grand championships and many of the other prizes. Four herds

CENTER LANE STOCK FARM

Mr. J. A. Englund, owner of Center Lane Stock Farm at Kenmare, N. D. is advertising some choice young Poland Chinas for sale. He also has a few good Red Polled Bulls and a Registered Percheron colt which he will sell at a bargain for quick sale. He also has some of the best Percheron mares to be found in North Dakota.

Here is a chance for the farmers of the northwest part of the state to get a good quality of registered stock, close to home. If you are interested in registered stock or poultry it will pay you to communicate with Mr. Englund or visit his farm. Please mention this paper when writing him.

Mr. C. F. Gummert of Renville, Minn. whose Poland China advertisement appears on another page of this issue informs us that he will be at the Minnesota State Fair with a fine carload of hogs. His hogs have been doing well this season and it is his wish that all his old customers and any interested in good hogs for the farm, look him up at the Fair and see his exhibit. He will have some extra fine boars and a few gilts there for sale. He can furnish good boars, pairs, or a herd good enough for any breeder.

The North Dakota Company of Valley City, North Dakota, would like to call the attention of the farmers of North Dakota to the advantages of Cuba, not only as an agricultural and fruit country but also as a place to live. If you are looking for a warmer climate it would be well for you to correspond with this firm. Tell them you saw their advertisement in this paper.

We are in receipt of the premium list and race program of the second annual fair and exposition to be held under the auspices of the Richland County Fair Association at Wahpeton, N. D. Sept. 24-27. We most heartily commend the enterprise of Richland county, and have great confidence in the management of this fair.

Full and reliable information on character of soil, and prices of lands in the Williston Irrigation district can be obtained by writing the Williston Land Co., Williston, N. D.

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Dr. C. D. Holley, N. D. A. C., Editor.

GOVERNMENT WHITEWASH

A good white wash is often a desirable thing for use about the farmings. The following is reasonably cheap and has given excellent satisfaction:

Slack about one-half bushel of fresh lime with boiling water, keeping it covered during the process. Strain it and add one peck of salt dissolved in warm water; three pounds of ground rice put in boiling water and boiled to a thin paste; one-half pound powdered Spanish whiting; and one pound clear glue dissolved in warm water; mix these well together and let the mixture stand for several days. Keep the wash thus prepared in a kettle or portable furnace and when using put it on as hot as possible. This will answer for either wood, brick or stone, and retains its luster for a long time. It is the formula recommended by the United States Treasury Department to all lighthouse keepers. It can be colored if desired to any shade. A little lampblack added makes a slate color, lampblack and Spanish brown a red stone color, yellow ochre or chrome yellow, a pretty cream shade, etc.

FIRE PROCESS PIGMENTS

By D. S. Hughes, Chemist Picher Lead Co., Joffin, Mo.

To undertake a description of the evolution of paints would require a thoro canvass of anthropology, archaeology and social history for their use was extensive even among the most primitive races. Fortunately no such exhaustive and exhausting discussion is necessary as we are concerned only with the last few steps in this evolution, which, like most of the vital improvements in the various branches of technology, have taken place during recent years.

Omitting colored plasters and considering oil paints only there never was any imperative need of paint until increasing cost of labor and materials brought about the modern construction of buildings with walls so thin they could not resist indefinitely the destructive action of the weather. Up to that time the use of paints was chiefly for ornamental purposes. Later the introduction of iron and steel bridges and frames and the use of these metals in ships developed a demand for paints which would protect and in response to this demand the improvement of paints took rapid strides.

Inasmuch as the use of colored paints is limited we can perhaps obtain a clearer insight into the problems involved by considering only white paints, or more properly white pigments, because there is no real need of discussing "vehicles" (that is the liquids in which the pigments are ground). We have at present only one good vehicle for general use: linseed oil, and it is not probable that any reliable substitute will be found for a long while as the chemical difficulties



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presented by this problem are tremendous.

In recent years it has become a widely accepted view that chemical stability and fineness of division are the main factors essential in a pigment, altho, to these might properly be added "opacity" because it is doubtful whether a paint lacking in "body" or hiding power could be brought into use, no matter what its protective efficiency might be.

Chemical Stability

The desirability of chemical stability in a pigment is not universally admitted and this is quite natural because a pigment which attacks the oil and makes a soap works somewhat easier under the brush and shows less tendency to run than an inert pigment. This ease of application is, however, bought at the expense of durability, the mixture of sap and oil being nonhomogeneous and wearing unequally.

A perfect example of the almost indestructible nature of a paint made from an excessively fine and absolutely inert pigment mixed with good oil is found in old sign posts lettered with lampblack upon a ground of corroded white lead, the latter being a pigment which always forms some soap with the oil. In many cases after the corroded white lead has entirely disappeared and the wood beneath it rotted deeply, the lampblack letters stand out above this rotten surface as if they had been carved in relief. In other words the lampblack which is probably the most stable substance (chemically) used in paints and possibly the most finely divided, has maintained a good protective surface long after the chemically active corroded white lead has completely disappeared.

Another instance of the evil effects of chemical combination between the oil and the pigment is found in the splitting off of paints made from straight zinc oxide. This action is due to the fact that zinc oxide forms with linseed oil a hard, brittle, enamel-like surface not sufficiently elastic to expand and contract under weather changes in unison with the surface to which it is applied. It therefore tears loose from the wood of a house, leaving ragged spots over which it is hard to repaint.

Still another example of chemical activity is the "checking" or "alligatoring" of straight corroded white lead coats. The soap first formed from a part of the oil gradually shrinks with age and so splits into little squares exactly as the muddy bottom of a pond breaks up when it goes dry.

Fineness of Division

No matter how finely a substance may be ground, when placed under the microscope, it appears distinctly coarse compared with materials which are produced as smoke or fume and are

packed or ground with oil without any preliminary grinding to render them fine.

We have seen the behavior of lampblack (which is simply smoke) and contrasted it with the comparatively coarse and unstable corroded white lead and we will next take up two other kinds of smoke or fume paints which together I shall call "Fire Process Pigments;" these are Zinc Oxide and Sublimed White Lead.

Both are made by closely analogous

processes, the former sometimes by burning metallic zinc and sometimes by burning zinc ores in an open fire from which the fume is drawn into flue and settling chambers by a suction fan and finally deposited in cloth screens which allow the gases to pass thru and retain the white zinc oxide.

Sublimed White Lead is made in much the same way except that only one kind of ore is used; the native sulphide of lead or galena. The fume is a basic sulphate of lead, quite different in

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all respects from the neutral sulphate of lead obtained by precipitation. The fume is highly opaque, chemically stable and exceedingly fine. An idea of its fineness can be obtained from the fact that it is drawn by a very moderate suction a thousand feet before it is collected. Of course nothing but the very finest kind of material could float this far without settling.

We now come after this somewhat tedious preamble to the real point at issue: what pigment or pigments are the best and are these best used alone or in combination?

If we admit the necessity of chemical stability to prevent destructive action on the oil we must give a demerit mark to both zinc oxide and corroded white lead and we still have to consider the claims to stability of sublimed white lead. We really need no discussion of other pigments like white earthly minerals or badly made compound pigments for these are used in paints sometimes for cheapness and, perhaps more often to dilute the real paint pigment to avoid some objectionable trait which is inherent in it. For brevity I will mention only one such use of these materials which is perfectly legitimate. This is the employment of pulverized asbestos or sometimes silica to prevent the separation of liquid and pigment in mixed paints.

The following comparative tests will indicate the relative chemical stability of the three pigments and these tests are really indicative of the behavior of the pigments, because the changes of atmospheric conditions, the action of coal smoke and foul gases subject a paint coat to very hard trials and if we consider the fact that a paint coat is only about one four-hundredth of an inch thick we can see that it does not have to yield very much to the weather attack to be destroyed.

These tests, which anyone can perform are first:

Pour a little acetic acid (almost any acid will do and it may be used strong or weak) upon each of the pigments:

The zinc oxide dissolves: the corroded lead bubbles (this shows destruction of the carbonate) and finally dissolves: the sublimed lead shows no change which the eye can detect.

Second. Brush three streaks one of each paint in oil upon a board or glass plate, and expose them to Hydrogen Sulphide Gas. This is the active agent in sewer gas and there is a great deal of it in city air. The Zinc Oxide is apparently unchanged (really it changes to Zinc Sulphide which is white but not a durable paint): the corroded lead turns black: the sublimed white lead slightly darkens.

Third. Place a little of each pigment in an iron spoon and heat it red hot

The corroded lead first changes to brown litharge and then is changed to metallic lead. The zinc and sublimed white lead both turn somewhat yellow and afterward turn white again.

It will be seen that both the fire process paints withstand these tests much better than the corroded white lead: indeed, the corroded lead is so weak chemically that almost any active agent destroys it, and under service conditions even the fact of a manure pile being in the neighborhood will cause its discoloration. The zinc oxide fails in the first test and partially in the second; the sublimed white lead shows by far the greatest stability of the three pigments.

Now in fineness the microscope shows corroded lead to be quite coarse compared to the other two and it reveals a serious fault in zinc oxide. Its particles are not opaque and this accounts for the unfortunate transparency of straight zinc paints. The sublimed lead shows itself to be intensely opaque and excessively fine and this taken in connection with the chemical stability above shown proves it to be most nearly of the character of that most durable of all pigments (which, by the way, might itself be truly called a fire process pigment) lampblack.

There has been much discussion as to the merit of chemical inertness on the part of a pigment in the paint coat, and extreme views have been expressed

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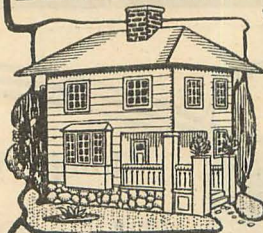
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both for and against. On one hand the extremists have held that reactivity of the pigment was so objectionable that pigments should contain the fewest possible number of chemical compounds to avoid interaction between the compounds of the pigment. Others have opposed the introduction of earth carbonates as likely to cause saponification either by direct decomposition of the carbonate by the free fatty acids of oil or by reaction with the glycerides themselves.

On the other hand, it has been claimed that without some action between the vehicle and the pigment there was insufficient emulsifying action to permit of a proper binding between vehicle and pigment, and, also, that saponification tended to avoid splitting or flaking of the coat.

Inasmuch as the bases of fire process paints are all, under certain conditions, capable of saponifying action with oils the question of activity should be carefully considered.

Difficulty is met with at the start in examination of paint coats to decide as to saponification because different bases produces widely differing effects: zinc a hard, lustrous and brittle coat: lead (as may be seen by examination of any weathered paint made from corroded lead) a dull, easily crumbled, dry layer which is split in tiny squares by shrinkage of the saponified coat. Other bases, such as lime, produce still other effects, but as these do not belong to fire process pigments they need not be considered here.

In addition to chemical action proper within the paint coat a physical factor must sometimes be recognized: the action of hygroscopic or water absorbing ingredients. Zinc sulphate, an almost invariable ingredient of leaded zincs and zinc oxides made from sulphides, sometimes causes startling changes for which the painter is usually blamed.

Considering simplified conditions, such as the action of one given ingredient upon the oil, the chemical action in the coat may be fairly predicated.

Saponification is sure with free lead oxide, and, as is well known, with corroded lead; this latter action being probably caused by decomposition of the basic carbonate in contact with the oil by acid action of surrounding gases. This, at least, would seem to be the explanation demanded by the destruction of the oil under weathering, while, no such action is apparent when the paint is sheltered.

Zinc oxide, especially when contaminated with sulphur dioxide and in the presence of rosin is vigorously and destructively active.

Salts of strong acids, such as sulphates, are not subject to decomposition by the oil nor by interaction with

other pigments unless the reacting pigment is an oxide or hydrate of a stronger base and an appreciable amount of water is present.

As to the advantage or disadvantage of chemical action in the coat, it may be clearly stated that anything more than fractional saponification is de-

structive, as the resultant mixture of soap, pigment and oil has neither the elasticity nor the coherence of oil dried without decomposition. A well ground paint made from an inert pigment of sufficient opacity and body will give longer service.

(Continued in September Number)

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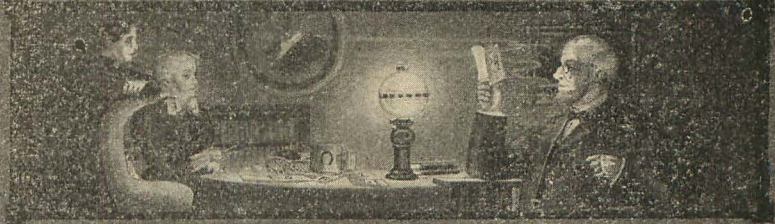
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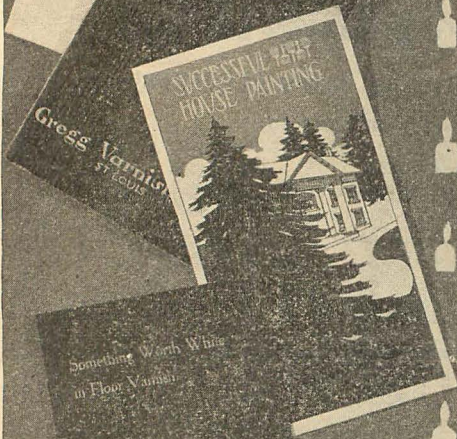
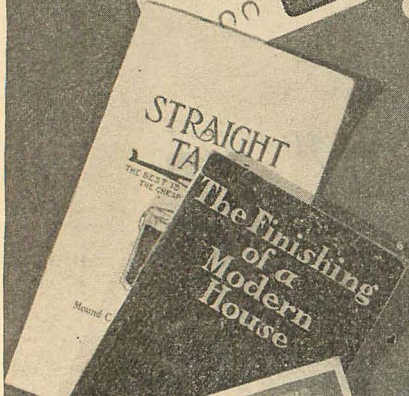
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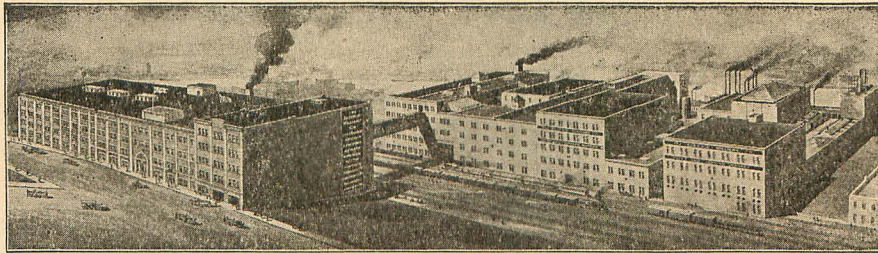
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